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An Address
ON THE
EPIDEMIOLOGY OF CHILDREN'S INFECTIOUS DISEASES.*

BY ULRICH FRIEDEMANN, M.D. BERLIN,
EXTRAORDINARY PROFESSOR AT THE UNIVERSITY OF BERLIN; DIRECTOR OF THE INFECTIOUS DISEASES DEPARTMENT OF THE RUDOLF VIRCHOW HOSPITAL.

A NOTABLE change has taken place during recent years in the conception of epidemic diseases, a change which is of importance not only from a theoretical but also from a practical point of view. The classical prophylaxis of epidemic diseases has been established on the basis of the doctrine of Robert Koch, that the pathogenic microbes are only to be found in those diseases which they have caused, while in healthy people they are either absent or found only as an exception. A sharp line can be drawn between these pathogenic microbes and the group of saprophytes, which, lacking any specificity, are found on the skin and in the mucous membranes of any person. The modern doctrine holds that between pathogenic microbes and saprophytes there is only an artificial quantitative distinction. We know that in a considerable number of diseases the causative microbes are pathogenic only for a very limited number of human beings, and are but inoffensive saprophytes for the majority. Infection is therefore not identical with infectious disease, save in a very few cases. We have to differentiate between infection followed by disease and infection without disease. The latter can be called "latent infection" and, in its propagation, "latent epidemisation" ("latente Durchseuchung"). It is easy to understand that the extent of "latent epidemisation" is of the utmost importance for preventive measures. We must therefore get an exact idea of the extent of the latent epidemisation of each infectious disease. In an extensive latent epidemisation we may assume the following two factors: (1) a very small inborn susceptibility of individuals to the contagious disease; (2) an extensive spread of the specific microbes. The first statement does not need any interpretation. If the microbe is so virulent for man that infection coincides with the symptoms of disease, we experience a manifest, not a latent epidemisation—for example, measles.

Latent Immunisation.

The spread of microbes depends upon the manner of their excretion. The latter is of the greatest importance in diseases conveyed through droplet infection, and in these latent epidemisation plays an important part. The practical importance of latent epidemisation lies not only in the prophylaxis of epidemics, but also in a phenomenon which I call "latent immunisation." Latent infection, as well as recovery from an infectious disease, may confer lasting immunity. In a large population latent immunisation must naturally be a function of age. The older an individual the more frequently he has been exposed to latent infection, and the higher therefore is his degree of latent immunisation.

We have known for a long time that the insusceptibility of adults to measles is due to the fact that almost everyone gets over them in youth. During the measles epidemic on the Faroë Isles, all the inhabitants, irrespective of age, were afflicted. Such an explanation is impossible for acute poliomyelitis, diphtheria, and scarlet fever. Since the number of children who contract these diseases is comparatively small, it is difficult to understand the immunity of adults. The explanation is that latent epidemisation takes the place of the disease. The immunity of adults towards children's infectious diseases is not inborn but is the result of latent epidemisation. The restriction of certain infectious diseases to the period of infancy is explained by the enormous extent of manifest or latent epidemisation in these diseases. Since this extent depends on the method of propagation of the microbes, it is not an accident that all infectious children's diseases are spread by means of droplet infection, whereas infectious intestinal diseases are not restricted exclusively to infancy. The relative resistance of adults towards the saprophytes of the mucous membranes of the upper respiratory tracts—the streptococci and pneumococci—is acquired by latent epidemisation. Among primitive races and people living far from civilisation very dangerous contagious diseases are caused by these organisms—e.g., pneumonia among the negroes in the mines of the Transvaal and the black workmen of the Panama Canal, and, during the war, among American soldiers recruited from country districts. The infant responds to an infection like an individual of a primitive race. The malignancy of measles in children under three does not depend upon the virus itself but upon the mixed infection with streptococci, which causes severe septic and contagious bronchial pneumonias. The course taken by children's infectious diseases is often dominated by these mixed infections. The numerous trifling infections which take place during childhood confer an immunity to pneumococci and streptococci, transforming them in the adult into inoffensive saprophytes.

We have at our disposal four methods for the study of infectious diseases: (1) bacteriological analysis; (2) immunity reactions, such as the Schick test in diphtheria and the Dick test in scarlatina; (3) the epidemiological method (statistics); (4) the methods of experimental epidemiology—the newest method taken by epidemiological science. This development we owe to the studies of Topley in England, and of Flexner, Amoss, and Webster in U.S.A.

ACUTE POLIOMYELITIS.

Acute poliomyelitis, which lately has attracted especial interest, shows the strongly marked characteristics of children's infectious diseases. In 1840 the German physician Heine was the first to outline the pathography of poliomyelitis as an entity. At that time only a few cases had been recorded, and nobody thought that the disease was contagious. In 1895 Medine referred to an epidemic in Sweden; there were only 43 cases. In 1905 a second epidemic of 1000 cases occurred in Sweden, and soon spread all over Norway, Germany, Austria, and America. Since that time poliomyelitis has never completely disappeared. It was not, however, until 1910 that it rose to a pandemic of considerable proportions, which lasted three years in Sweden and affected 10,000 persons. This outbreak was followed by the spread of the disease almost all over the world. In Germany we have noticed an increase in the number of cases, and it may be that we are on the eve of a new outbreak.

Poliomyelitis epidemics follow a very characteristic course. The spread of most contagious diseases is favoured by communication and has a direct connexion with the density of population. Poliomyelitis especially affects lonely and remote districts. The fact that the majority of cases are isolated and have no obvious connexion with other cases seemed to contradict the contagiousness of the disease, but during epidemics the contagiousness rises considerably. During the Swedish epidemic of 1910–1913, according to Wernstedt, 18·6 per cent. of the cases were group cases in one house, while 38 per cent. were caused by infection in hospitals. On account of these peculiarities poliomyelitis has been held for a long time to be infectious, but not contagious. Some authors supposed that the virus lived in the earth, and thus explained the spread of the disease in country districts. Others thought that it was propagated by insects. This opinion was supported by the seasonal incidence curve. While most children's diseases have their annual maximum in the autumn, poliomyelitis is a summer disease, at its maximum in July and

*Delivered in London at the invitation of the Health Organisation of the League of Nations at an International Course for Medical Officers of Health.

August. But as in winter epidemics the number of cases is considerable, we must exclude an exclusive or prevailing participation of insects in the propagation of the disease. The opinion that poliomyelitis is a primary disease of domestic animals is without foundation.

It was a valuable advance when Wickmann laid all these doubts at rest and proved, by an exact cartographic study of the Swedish epidemic of 1905, the contagious character of the disease. The epidemic arose from isolated centres scattered all over the country, but the cases showed a pronounced group-formation round these first centres, from which they afterwards spread in a radiate form, following the trade routes. It was Wickmann who made the important observation that connexion between the single cases could often be traced through abortive cases without palsies.

Remaining contradictions were solved by Wernstedt's epidemiological studies during the Swedish epidemic of 1910–1913. When Wernstedt, following the example of Wickmann, made an exact cartographic note of the cases of this epidemic, he was surprised to discover that all the districts where cases of poliomyelitis had occurred in 1905 were free from infection during the epidemic of 1910. Sometimes these districts were quite surrounded by the epidemic, and were therefore proved to be immune. This immunity could only be due to the epidemic of 1905, but this fact is difficult to explain. Poliomyelitis, though it travels through countries at a rapid rate, affects few individuals in each country. For instance, the cases in the districts visited by the epidemic of 1905 numbered but 1 to 2 per cent. of the population; nevertheless, the whole population had become immune. The entire population must, therefore, have come in close contact with the microbe without being affected. This, then, is the first example of an extensive latent epidemisation. The hypothesis of latent epidemisation readily explains the other peculiarities of the epidemiology of poliomyelitis, including: (1) the dependence of the spread upon the density of population; (2) the incidence of the epidemic at different ages.

The more congested the population of a district and the more active its communication with its neighbours, the easier is the spread of the ubiquitous poliomyelitis virus in the intervals between epidemics, and the more readily will it latently infect and immunise the population. On the other hand, the population of remote districts is deprived of this preventive effect and is therefore much more exposed to infection. The frequency of group cases in a household will be the higher the greater the number of susceptible persons united under the same roof. Table I. demonstrates this:—

TABLE I.

Size of town.	Incidence-rate (per cent.).
More than 100,000 inhabitants	.. 8·8
100,000 to 10,000 inhabitants	.. 9·4
Country town, less than 10,000 inhabitants	.. 13
Country	.. 20·7

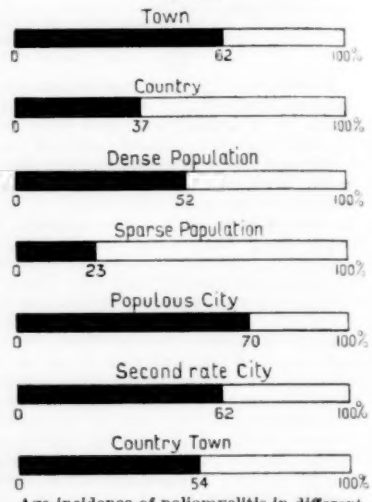
Poliomyelitis is generally considered to be essentially a disease of the earlier years of life, but its age-incidence depends also in a very characteristic manner upon conditions of local distribution and traffic. If the population is not dense and communications not developed, poliomyelitis ceases to be a children's disease and more adults are affected. This will be seen from Table II. and Fig. 1.

TABLE II.

Age-group.	Town.	Country districts.	Population.		Populous city.	Small town.	Country town.
			Dense.	Sparse.			
	%	%	%	%	%	%	%
Years 0–5	61·8	37·5	51·8	23·0	70	61·8	54·2
Over 6 ..	38·2	62·5	48·2	77·0	30	38·2	45·8

In districts where the poliomyelitis virus has little or no opportunity to spread, there is a high susceptibility among adults. The more the population is exposed to the virus, the more is the susceptibility restricted to the earliest years of life. Should this hypothesis prove to be correct, there should be no difference in susceptibility between young and old where poliomyelitis is imported into a population that has never been in contact with it before. A. Müller has reported an outbreak of poliomyelitis on a Pacific island, during which 37 per cent. of the natives were affected, and the maximum incidence was between the ages of 12 and 40.

FIG. 1.



Age-incidence of poliomyelitis in different districts. The black rectangles represent the age-groups from 0–5 years, the white rectangles the ages over 6 years.

I have restricted myself to the Swedish epidemics, because their epidemiological laws have been the most thoroughly studied. These significant results have been obtained from epidemiological statistics alone.

Ætiological Investigations.

To Landsteiner, Levaditi, Flexner, Wiesner, Römer, and others we owe the discovery that poliomyelitis may be transmitted to the lower monkeys by subdural inoculation of the brain and spinal cord of poliomyelitis cases. Flexner and Amoss were able to prove by experiments the highly important epidemiological fact that the virus is also to be found in the nasal secretion of the infected animals, and that infection could be induced by dropping the virus on the intact mucous membrane of the nose. These results suggest that in man the mucous membrane of the nose is the most important portal of entry as well as the chief path of elimination of the virus, and we may further suppose that case-to-case infection takes place by droplet infection. This statement is in harmony with existing epidemiological conceptions. Kling and Wernstedt have demonstrated the poliomyelitis virus in the nasal secretion of man, but it is doubtful whether this is the only mode of virus transmission. Since in the beginning of poliomyelitis diarrhœas are not rare, it is plausible that the virus may be excreted in the fæces. Flexner and Amoss have found it in the excreta of monkeys, but droplet infection is in all probability the more important factor, because in this way the virus gains a far wider propagation. Spontaneous fluctuations of virulence observed in poliomyelitis virus by Flexner and Amoss are of great interest and may lead to an explanation of the coming and going of epidemics.

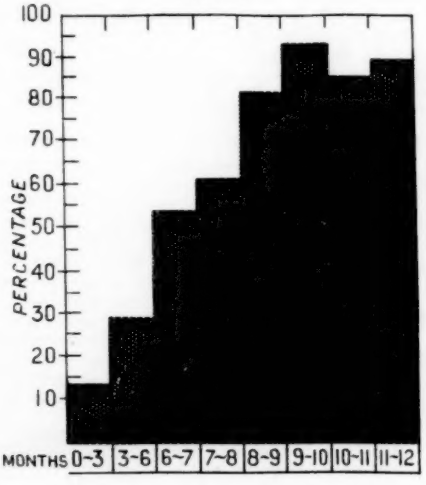
DIPHTHERIA.

This disease attracts especial attention nowadays because there are signs of a threatening increase in several capitals, such as Paris, Budapest, and Berlin. Since 1926 the number of cases in Berlin has doubled. Far more alarming, however, is the malignant character suddenly taken by this disease. Whereas the percentage of diphtheria mortality in my hospital used to be 4–7 per cent., since 1926 the mortality has risen to 25–35 per cent. Even patients injected with large doses of serum on the first day have

succumbed within 24 hours. In order to answer the question whether this means the beginning of a new pandemic we must glance at the epidemiological history of diphtheria. Since 1894 a decrease has been noticed all over the world. As diphtheria serum was discovered in 1894, the decrease of mortality has been attributed chiefly to this factor. This, however, cannot be the only one, because the morbidity also shows a striking decrease which cannot be influenced by the serum. Some writers explain the decrease of diphtheria morbidity by modern prophylactic measures, but a comparison of the decrease of diphtheria with the decrease of other infectious diseases casts doubt on this explanation. In the period 1866–1896 the decrease of scarlet fever in England was more marked than that of diphtheria, notwithstanding the fact we did not know anything about the virus of the former, and had not therefore the means of organising prophylaxis. It seems necessary to emphasise the fact that the decrease of diphtheria is not entirely due to therapeutic or prophylactic measures, so that the outbreak of a new epidemic is always possible. The fluctuations of the epidemic spread may depend upon the virulence of the bacillus and the susceptibility of the population. During the present epidemic in Berlin Dr. H. Schmidt, of Marburg, proved the virulence of bacilli cultivated from severe cases. After an injection of 0·05 c.cm. of a broth culture of living diphtheria bacilli guinea-pigs died within 24–36 hours.

Nevertheless, I doubt whether the fluctuations of virulence of diphtheria bacilli are responsible for the coming and going of the diphtheria epidemics. It seems very difficult to explain the striking and orderly course of diphtheria by the fluctuation of virulence alone. Diphtheria has a typical time-curve, as

FIG. 2.

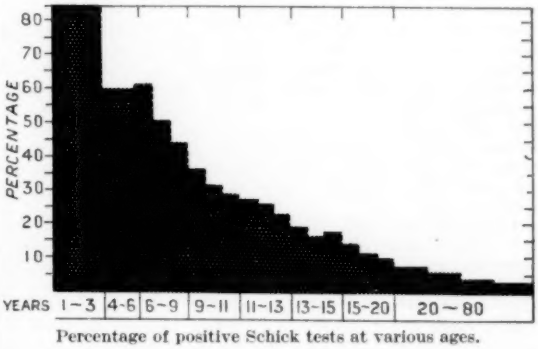


Percentage of positive Schick tests in first year of life.

Gottstein has pointed out, with a constant ebb and flow. It appears as an epidemic extending over some 30 years, disappears for decades, and then begins another period of 30 years.

The susceptibility of a population depends first upon inborn resistance, and secondly upon an immunity acquired by manifest or latent epidemisation. Experimental and epidemiological observations prove that there are inborn differences in resistance to diphtheria. Hirtzfeld has stated that the antitoxic titre, one of the most important factors of diphtheria resistance, represents an inborn quality, hereditary like the blood group. Gottstein, in his epidemiological studies, expresses the opinion that the natal predisposition of generations to diphtheria is subject to orderly fluctuations. In the epidemic course of diphtheria the most susceptible individuals succumb to the plague, and the surviving individuals have a high inborn resistance. The immune generation transmits this power to its descendants, and thus a series of non-susceptible generations comes into the world after a severe epidemic, and represent an unfavourable soil for the development of the microbes. In the course of decades susceptible generations arise from the crossing with individuals who had been

FIG. 3.



Percentage of positive Schick tests at various ages.

spared by the epidemic, and under these conditions diphtheria can make its reappearance. There is no doubt that Gottstein's theory explains in a plausible way the orderly coming and going of epidemics. The facts must, however, be more complicated. One predominating factor of the highest importance for the susceptibility of the population has not been considered by Gottstein, and that is latent epidemisation. It stands to reason that latent epidemisation increases with an increase of diphtheria cases; that the spread of the disease is followed by an increasing immunisation of the population, which finally stops the epidemic. With the disappearance of diphtheria cases latent epidemisation also disappears, and generations susceptible to diphtheria gradually reappear. Latent epidemisation produces the same effect as selection by disease.

We can recognise, therefore, three factors which may explain the coming and going of epidemic diphtheria: (1) fluctuations of the virulence of Loffler's bacilli; (2) fluctuations of the natural resistance, depending upon selection; (3) fluctuations of immunity gained by latent epidemisation (latent immunisation).

What share these three factors have in the genesis of diphtheria epidemics is a very interesting problem of epidemiology which has been but little studied.

The Extent of Latent Epidemisation in Diphtheria.

We have three different ways of estimating this: (1) the immunity proof (Schick test); (2) the estimation of the spread of diphtheria bacilli by bacteriological methods; (3) epidemiological statistics.

TABLE III.

Mth.	Per cent.	Yr.	Per cent.	Yr.	Per cent.	Yr.	Per cent.
0–3 ..	15	1–3 ..	83·2	10–11 ..	29·3	16–20 ..	14·2
3–6 ..	30	4–6 ..	58·6	11–12 ..	28·2	20–30 ..	12·2
6–7 ..	56			12–13 ..	26·6	30–40 ..	10·6
7–8 ..	63	5–6 ..	60·3	13–14 ..	23·1	40–50 ..	7·8
8–9 ..	83·8	6–7 ..	50·4	14–15 ..	19·7	50–60 ..	6·4
9–10..	93·1	7–8 ..	43·5	15–16 ..	17·8	60–70 ..	4·9
10–11 ..	87·0	8–9 ..	36·6	16–17 ..	18·4	70–80 ..	4·9
11–12 ..	91·1	9–10..	32·2				

Mth. = months. Yr. = years.

The Schick test has been carried out on millions of children in America, England, Holland, and Russia, and the theoretical elements of the reaction are, therefore, generally known. After an intradermal injection of one-fiftieth of a lethal dose of diphtheria toxin, as tested on guinea-pigs, all persons possessing no diphtheria antitoxin in their serum show a local

inflammation, whereas those people who have more than one-thirtieth of an antitoxin unit in their serum show no reaction. Parker and Zingher showed that the positive result of the Schick test depends first of all on the age. (See Table III. and Figs. 2 and 3.)

The number of new-born Schick-positive individuals is small. It attains the maximum at the end of the first year of life, and then sinks rapidly and progressively. The negative test in the new-born infant depends on the transmission of antitoxin from mother to infant by way of the placenta, and perhaps with the milk. The extensive studies of Zingher showed that the gradual disappearance of positive Schick tests with increasing age is due to a latent epidemisation, and stands in a certain relationship to the density of the population. Zingher found that 87·3 per cent. of the school-children in the poorer, thickly populated districts, and 50·2 per cent. of those from the well-to-do classes were negative. The number of Schick-negative pupils in country districts is not more than 23·1 per cent. The greater the possibilities of contact, the higher is the rate of Schick-negative individuals.

The studies of Joannon and Lerebouillet in Roumania are of great interest. These authors observed that all children showing a positive test on reception in a surgical department became negative after one year's stay at the hospital. The same result was obtained by Zingher. Among the children of a home he found that 33·3 per cent. of those who had been less than three months in the home were Schick-positive; of the older inhabitants not more than 3·4 per cent. These observations leave no doubt that the disappearance of positive Schick tests, corresponding to increasing age, is due to a latent epidemisation of the population by the diphtheria bacilli. A latent epidemisation of this extent cannot be accounted for by the number of diphtheria cases. I have calculated that, as far as Berlin is concerned, some 3·3 per cent. of the 10-year age-group have overcome diphtheria, but not less than 70·7 per cent. of this group show a negative Schick test. In other words, 67·4 per cent. of the population lose their susceptibility towards the diphtheria toxins at the early age of 10 in the way of temporary carriership.

Bacteriological Results.

The results of the Schick test show a degree of latent epidemisation that proves the diphtheria bacillus to be ubiquitous. This ubiquity, however, although accepted by Roux has been rejected in Germany by Robert Koch and his adherents. The answer to this question depends upon another problem, whether the pseudo-diphtheria bacillus, a very common saprophyte, and the diphtheria bacillus are identical or two very different species. No compromise has yet been reached between unitarians and dualists. I prefer to restrict myself in my epidemiological discussions to microbes which are generally recognised to be pathogenic—that is to say, to the virulent diphtheria bacillus.

We are well informed about the percentage of virulent diphtheria carriers in schools and barracks. The rate obtained depends on whether or not diphtheria cases have occurred in these institutions. In schools the average rate of carriers amounts to 10–20 per cent., but can be much higher. Seligmann, for instance, found that in a class where eight cases of diphtheria had been suspected, 33 out of 46 children were carriers. It is of much greater importance from an epidemiological point of view to know the number of diphtheria carriers in a dense population where cases of diphtheria have not occurred.

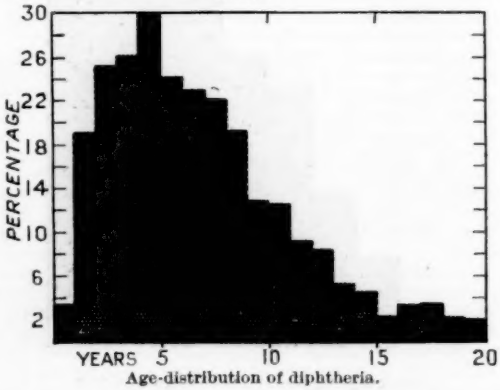
The very large number of investigations carried out in schools all over the world give a maximum of 5 per cent. and a minimum of 0·8 per cent. We can, therefore, consider that the average number of virulent carriers amounts to 2·5 per cent. Positive results are much more frequent if we analyse the nasal secretion of babies. Out of 55 babies Kirstein found 27 per cent. to be carriers of virulent diphtheria bacilli. If they were investigated daily from the first day of life, the rate rose to 85 per cent. Similar figures have been reported by Wiltschke. If we confine ourselves to the rates obtained for school-children and adults they will appear at first sight to be low. These rates seem to confirm those authors who deny the ubiquity of the diphtheria bacillus, but they are the results of one single investigation. We obtain quite different figures if we ask how many of the children will become carriers in the course of a year. It is known that diphtheria bacilli do not live long in a healthy organism, and if we suppose that on the average each school child carries diphtheria bacilli for four weeks in a year, we are allowing an ample margin. In order to maintain the quota of 2·5 per cent. of carriers we must multiply this figure by the number of months in the year, which gives the proportion of carriers among school-children as 30 per cent. If we apply these results to the entire population, we come to the conclusion that in one year about one-third of the population is infected with diphtheria bacilli without contracting the disease. This assumes latent epidemisation, which is practically equivalent to the ubiquity of the diphtheria bacillus.

TABLE IV.—*Giving the Age-distribution of Diphtheria.*

Age in years.	Per cent.	Age in years.	Per cent.	Age in years.	Per cent.
0–1	3·8	7–8	22·7	14–15	4·8
1–2	18·4	8–9	19·2	15–16	2·6
2–3	25·9	9–10	12·4	16–17	3·0
3–4	26·3	10–11	12·3	17–18	3·4
4–5	30·3	11–12	9·4	18–19	2·4
5–6	24·9	12–13	8·5	19–20	2·2
6–7	23·3	13–14	5·5		

Diphtheria is a children's disease (Fig. 4), but the correspondence of Table IV. with the curve of positive Schick tests (see Figs. 2 and 3) proves that the immunity of the older age-groups is not physiological but acquired by latent immunisation. The ubiquitous spread of diphtheria makes it impossible to state whether there would be a lack of adult immunity in a population which had been spared by the disease. Degkwitz asserts that the share of adults in the morbidity of diphtheria is higher in the country than in cities.

FIG. 4.



Age-distribution of diphtheria.

In Berlin the age-groups above 15 show a diphtheria morbidity of 17·1 per cent., whereas in the country town of Greifswald and its rural surroundings the morbidity of these groups amounts to 33·3 per cent. Statements regarding the influence of density of population and social conditions are very contradictory. The general opinion inclines to the belief that the spread of diphtheria is favoured by density of population, which increases the possibilities of contact. The observations of Reiche in Hamburg are very valuable. The conditions there are favourable, because the parts of the town inhabited by well-to-do people are isolated from those of the poorest classes. In the period from 1901–1914 the mortality was: rich, 5·9 per cent.; poor, 16·6 per cent. The morbidity-rate, however, was in inverse ratio: rich, 118·4 per cent.; poor, 86·9 per cent.

We should not, however, consider these rates as an expression of the real case-incidence, because in well-to-do families the physician is consulted for lighter cases.

If contact be the predominating factor it is obvious that the frequency of illness should be less in the well-to-do quarters than in thickly populated areas where the hygienic conditions are unfavourable. The local distribution of cholera among the rich and the poor in 1892 is an example of an illness where contact is of predominating importance, but where latent epidemisation has no great effect. The following figures give the number of cholera cases arranged according to the income-tax classes :—

Income.	Total cases.	Deaths.
600–1200 Mk.	116·84 per mille	.. 59·69 per mille
More than 5000 Mk. ..	24·63 „	.. 13·08 „

The relations between density of population and diphtheria morbidity find an adequate explanation only if we accept the theory of latent epidemisation.

Practical Conclusions for Prophylaxis.

Our sanitary precautions are based upon the belief that we are able to find the carriers by bacteriological tests and make them harmless. In special cases, such as the family, schools, and military barracks, these measures are possible and even necessary, but it is quite uncertain whether we should be able to achieve any results worth mentioning in an epidemic, seeing that in one year 30 per cent. of the population are temporary carriers. We lack information as to the immediate danger represented by healthy carriers. We have every reason to believe that a carrier is generally much less infectious than a patient. Doull and Hilario Lara determined the proportion between the cases infected by carriers and by diphtheria patients respectively, and found them to be as one to nine or ten. Contrary to the general opinion, they found no difference between the carriers of virulent and non-virulent diphtheria bacilli. They came to the conclusion that the danger of infection by carriers is negligible compared with the danger of infection by patients.

This conclusion may be admitted for single cases, but the small infective danger of carriers is more than balanced by the comparatively enormous number. During 1905 there were 2327 cases of diphtheria in Berlin amongst a population of 2,100,000. We may suppose that in the course of the year some 30 per cent., or 700,000 of the population, were carriers; since the carrier is 10 times less infectious than the patient, we will reduce the number to 70,000. This means that the patients suffering from diphtheria caused only 3·2 per cent. and the carriers 96·8 per cent. of diphtheria cases. The conclusions drawn are of such importance for public health measures that we must be very cautious and prove them by further experience. Similar figures are given by other epidemiological observations. We can obtain an approximate measure for the number of case-to-case infections if we state how many of a given number of diphtheria cases are produced by contact in the family. The League of Nations made inquiries among different nations, and the material is represented in Table V.

TABLE V.

Author.	Total of cases.	Percentage of contacts.
Moldovan (Roumania)	6,341	..... 1·9
Hachta (Prague) ..	.. 12,126	..... 1·61
Intrario (Italy)	.. 19,004	..... 2·48
Jötta (Holland)	.. 5,130	..... 6·55
Chodzko (Poland) ..	.. —	..... 2·5
Sweden	.. —	..... 3·3
Bulgaria	.. —	..... 2·15
Norway	.. —	..... 17·6

Excluding Norway, the family contacts amount to an average of 2·9 per cent. Since contagion is nowhere so easy as in the family, we see that the number of case-to-case infections does not amount to more than 2·9 per cent. of the total of diphtheria cases, almost the same as the 3·2 per cent., calculated as caused by patients. If 97 per cent. of all diphtheria cases are infected by carriers, it is hopeless to fight against a diphtheria epidemic by finding out carriers and isolating them. In epidemics a higher rate takes place in the family contacts. Gottstein's observations on diphtheria in 1895, the climax of an epidemic, showed that the number of family contacts amounted then to 17·6 per cent. of the total of all diphtheria cases.

Active Immunisation.

It is clear why, in spite of the most intensive sanitary precautions, the decrease of diphtheria has been less than that of other diseases, the agents of which have up till now not even been discovered. The classical methods of Koch's prophylaxis, which have proved of use in infectious diseases of the digestive tract, seem to be of no value in diseases transmitted by droplet infection. The fight against diphtheria epidemics is only possible by active immunisation. The methods used in England and America are well known.

More than 1,000,000 children have been immunised against diphtheria, and the material should be sufficient to give an estimate of the value of the method, if we take into consideration the Schick test alone. It seems possible to change a positive Schick test into a negative one in 80–90 per cent. both with toxin-antitoxin mixtures and the anatoxin of Ramon. We are entitled to suppose that these children are, with few exceptions, also immune to diphtheria. But what about the 10–20 per cent. of children who cannot be immunised successfully? Is not this inability to produce antitoxins after immunisation the expression of a special lack of resistance to the natural diphtheria infection? If this is so is not the total of diphtheria cases exclusively recruited from this group of bad antitoxin formers? The number of diphtheria cases is extremely low in proportion to the total of the population; it varied in Germany during 30 years between 0·1–0·6 per cent. The group of bad antitoxin formers is therefore sufficient to provide all the diphtheria cases. This is not a mere hypothesis, for Reich and Weiss have stated that of diphtheria convalescents not more than 50 per cent. become Schick negative. It is reasonable to suppose that the diphtheria patient falls ill because he is unable to form antitoxins. Should this supposition prove correct we cannot rely on the Schick test. The children who are actively immunised are the ones who would become negative in any case through contact with the bacilli, without contracting the illness, and the number of really susceptible individuals is, therefore, not reduced.

The value of immunisation as a preventive measure against diphtheria can only be seen by comparing morbidity statistics among immunised and non-immunised children without considering the Schick test. Unfortunately, although the number of inoculated children is high, the statistics at our disposal are very poor. The only extensive statistics have been made by Park, and refer to 90,000 Schick-tested children. Of these 56,000 were originally negative; 33,000 who had given a positive reaction were actively immunised. In the first group there occurred five cases of diphtheria, in the second group nine cases. Hence, even after artificial immunisation the degree of immunity is lower than in natural immunisation by latent infection. To estimate the value of active immunisation Park controlled these results by a second group of 90,000 children, neither tested nor immunised, in which there occurred 56 cases of diphtheria. In comparing these numbers we must assume that the second group also contained 56,000 Schick-negative children with five cases of diphtheria. Therefore, comparing 33,000 non-immunised Schick-positive children with 51 cases and the same number of immunised originally positive children with nine cases, we find that the number of cases among the non-immunised is five and a half times as great as among the immunised. The American statistics show, therefore, the practical value of active immunisation. Similar statistics should be published in

countries where immunisation is commonly in use, and especially in those where diphtheria is widespread and dangerous.

Scarlet Fever.

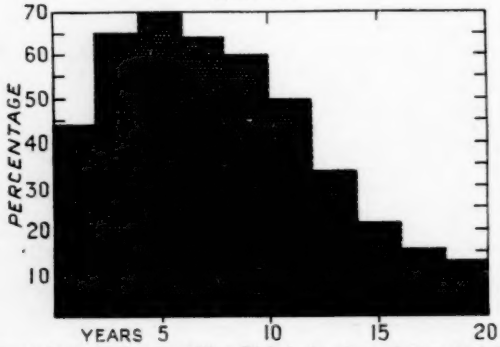
That the epidemiology of scarlet fever also depends upon the extent of latent epidemisation can be seen from the results of the Dick test. Table VI., compiled by Zingher, shows that the result of this test depends, like that of the Schick test, upon age. (See also Fig. 5.)

TABLE VI.

	Positive per cent.		Positive per cent.
0–6 months	44·8	5–10 years	33·2
6–12 „	65·3	10–15 „	22·8
1–2 years	71·6	15–20 „	16·8
2–3 „	64·2	More than 20 years	14·4
3–4 „	60·5		
4–5 „	48·2		

The Dick test becomes negative earlier in the city than in the country, and among the poor than among the well-to-do. At the beginning of this century Moser and Gabritschewsky regarded the streptococcus as the microbe of scarlatina, and built up the prophylactic and therapeutic methods which are now in use. But their evidence was not conclusive, and the strepto-

FIG. 5.



Percentage result of positive Dick tests at yearly age-periods from 0–20.

coccal ætiology was generally rejected, until Dochez and the Dicks established it, and refuted all objections. There were two arguments against the streptococcus: (1) the impossibility of differentiating the scarlatinal streptococcus from other streptococci; (2) the almost complete immunity after scarlatina, in contrast with the lack of immunity following other diseases caused by streptococci.

Dochez, Avery, and Lancefield claim to have differentiated the scarlatinal streptococci by means of agglutination; I have not been able to confirm these results and others have been equally unsuccessful. Some technical difficulties have not yet been elucidated. The Dick method of differentiating the scarlatinal streptococci seems to me to be of great importance. The Dicks could demonstrate a toxin specific for scarlatinal streptococci and absent in all other streptococci. All animals examined have proved insusceptible to this toxin, and only the goat shows an inconstant local inflammation after intradermal injection. Man, however, is very susceptible and shows all the characteristic symptoms after injection. After an intramuscular injection of about 0·5 c.cm. of a culture filtrate of scarlatinal streptococci, a person susceptible to scarlatina shows, after only a few hours, the following signs: vomiting, high fever lasting for 48 hours, and accompanied by a typical scarlet exanthem, scarlet tongue, and eosinophilia. This disease differs from genuine scarlatina only in that it is not contagious, because it is not an infectious but a toxic disease. The scarlatina toxins are demonstrable with the Dick test, which consists of the intradermal injection of 1/1000 c.cm. of a culture filtrate. Its specificity is not yet quite clear. Most streptococci reach to a larger quantity of filtrate (ca. 1/100 c.cm.), but the specificity of the Dick test is based on the following facts:—

1. It is only positive for persons susceptible to scarlatina; convalescents from scarlatina and individuals who have already had it give, with few exceptions, a negative result.

2. The scarlatina toxins can be neutralised with serum of scarlatina convalescents as well as with an artificial antitoxic scarlatina serum.

Results contradicting the specificity of the Dick test seem to be explicable by the use of filtrates containing also proteins of the bacteria, which give allergic reactions opposed to the specific Dick test. That is to say, they cause positive reactions in just those who are sensitised because they have recovered from scarlatinal infection. In order to eliminate the fallacy due to the presence of proteins it is always necessary to control the test by a toxin solution previously heated to 100° C. for one hour. In my experience even this control is not sufficient, probably because there are also thermolabile proteins in the filtrates. Another argument raised against the specificity of the Dick test is that sometimes streptococci cultured from other diseases form a specific scarlatina toxin. I have never met with such a strain, and according to the recent investigations of Jacobson and Szirmay they are rare. I cannot regard their existence as an objection to the specificity of scarlatinal streptococci, which differ from others only by the formation of a specific toxin, but possess the pyogenic properties of all streptococci. It is therefore easy to understand how a scarlatinal streptococcus may produce a suppuration or a puerperal sepsis in an individual immune to scarlatina. There are other equally convincing facts in favour of the ætiological rôle of streptococci. The two Dicks, as well as Nicolle, Conseille and Durand, were able to obtain typical scarlatina in susceptible persons by painting the throat with a small quantity of scarlatinal streptococci. Finally, Dochez and the two Dicks succeeded, by immunising a horse with the toxins of scarlatinal streptococci, in obtaining an antitoxic serum of excellent therapeutic effect in scarlet fever. I have used this serum in 300 cases, and in uncomplicated scarlatina its efficacy is quite marvellous. A further proof of the specificity of this serum is that it exhibits the so-called Schultz-Charlton blanching phenomenon; in other words, it is capable of setting free the toxins of scarlatina in vivo, bound until then to the cells of the blood capillaries. In my opinion the ætiological rôle of the *Streptococcus hæmolyticus scarlatinæ* is better established than that of any other pathogenic agent. In Germany it is still regarded as very doubtful and it has been pointed out that a filtrable virus might also play a part. I consider this supposition entirely hypothetical and superfluous. We have filtered the water which had been used for gargling by persons suffering from acute scarlet fever; we painted the throat of susceptible persons with the filtrate and found that even convalescents from angina caused by hæmolytic streptococci remained free from scarlatinal symptoms.

The Contagiousness of Scarlet Fever.

In collaboration with my assistant Dr. Deicher I undertook the task of analysing bacteriologically the path of scarlatina contagion. The streptococci were identified by the Dick test. We found that the skin scales previously purified did not contain any streptococci; we may therefore conclude that they do not eliminate the scarlatinal microbe. We did not find any streptococci in the urine. The principal focus is the tonsil where we, like Dochez, found them in all cases. Besides that they were only found in the pus. The transmission occurs principally by droplet infection, and infection through objects in common use must be considered. In the beds, on the walls, and in the air of rooms occupied by scarlatina patients we found numerous streptococci.

The occurrence of streptococci can be used to recognise scarlatina patients and healthy microbe carriers. The practical application of such an investigation, however, involves many difficulties. The

differentiation of streptococci by agglutination seems to be uncertain, and the toxin proof is much too complicated to be applied as a routine. I am inclined to deny that the occurrence of hæmolytic streptococci in the throat has in itself diagnostic value. Although the streptococcus hæmolyticus does not normally belong to the bacterial flora of the human throat, we meet with it in other diseases which we must exclude in diagnosing scarlatina—e.g., common angina. The occurrence of hæmolytic streptococci is therefore of no diagnostic value in acute scarlet fever; on the other hand, the absence of hæmolytic streptococci in the throat makes scarlatina improbable. This may be of practical value. If a patient has just recovered from scarlet fever we cannot be quite sure that the hæmolytic streptococci in his throat are scarlatinal, but we can conclude that a convalescent in whose throat we do not find any streptococci is completely free of scarlatinal microbes. Although there is no absolute safety, there is at least the same probability as in the bacteriological control of diphtheria. We have no information as to the period of contagiousness of scarlatina convalescents. It is customary in Germany to restrict the isolation to six weeks, or until desquamation ceases. We do not know whether many convalescents are free of microbes before this, but we know for certain that even after six weeks' isolation transmission has occurred in the family. We have found hæmolytic streptococci in the throats of 100 per cent. of convalescents on the day of their leaving the hospital after six weeks. This easily explains the frequency of return cases. We concluded that the patients failed to lose the microbes because they were constantly being reinfected. We therefore organised an intermediate "ventilation" block (Lüftungsstation), to which the patients who had but few microbes in their throats were transferred. No recent scarlatina cases were admitted to this block. The consequence was that the majority of patients could be dismissed after a six weeks' stay, free from streptococci. Many of them lost the streptococci after three to five weeks. On one occasion, however, a patient suffering from a wound scarlatina was admitted to the hospital; she had as usual in such cases no hæmolytic streptococci in the throat. She was therefore transferred to the intermediate block, and remained for three weeks free from streptococci. After that time recent cases of scarlatina were admitted to this block because the scarlatina wards were overcrowded. Two days afterwards we found hæmolytic streptococci in the throat of this patient.

We have made a practice of dismissing patients from the intermediate block irrespective of the period of illness and the existence of desquamation if the throat has proved free of hæmolytic streptococci at three examinations. Many patients could be dismissed after three to five weeks. Among 39 patients dismissed without bacteriological examination there were four return cases. Among 50 patients dismissed after examination no return cases occurred. A bacteriological control is therefore a far greater guarantee against return cases than routine dismissal after six weeks and after disappearance of the scales. Bacteriological control will also save the patient from unnecessary restrictions and reduce public expenditure. Of 40 private patients more than half had no streptococci after a period of two to three weeks.

Before the American investigations were known in Germany Degkwitz had used scarlatina convalescents' serum in the prophylaxis of 1000 cases with excellent results. I have obtained the same good results, and have never seen a failure among hospital cases treated with serum taken six weeks after the outbreak of the disease. Its efficacy is due in the first place to the antitoxin content, and sera of poor efficacy can be excluded by the Schultz-Charlton phenomenon. We proved by this method that the serum of many adults contains almost the same quantity of antitoxin as convalescents' serum. This fact is of eminent practical importance when sufficient convalescent serum is unobtainable. Convalescents' serum has a considerable bacteriological power against scarlatinal streptococci, a power which is lacking in artificial immune serum. This may have a share in its prophylactic effect. We use 5 c.cm. of convalescents' serum for children and 10 c.cm. for adults. The protection may last about four weeks. If no convalescents' serum is at our disposal we use artificial immune serum, but its prophylactic efficiency seems less reliable and disappears two weeks after injection. In order to avoid unnecessary serum injections, the individuals needing protection may be selected by the Dick test. This previous testing is useful in children's homes where enormous quantities of serum would otherwise be needed. In a children's home in Berlin in which cases of scarlet fever had occurred 126 inmates were tested by Dr. Deicher: 43 had a positive reaction, 83 a negative one. Of the 43 positive children 7 took scarlet fever, of the 83 negative children only 2 fell ill with scarlet fever, and 3 with angina. Thus a higher percentage of the positive children caught scarlet fever (18 per cent.: 2·4 per cent.). An absolute protection is therefore not guaranteed by the negative Dick test. Bacteriological control and serum prophylaxis place at our disposal preventive measures which are very effective in single cases but, as in diphtheria, these methods are only of limited value in public health campaigns against scarlatina, on account of the enormous number of healthy microbe carriers. Only active immunisation would ensure complete success. In 1912 Gabrischewsky in Russia immunised by means of vaccines of scarlatinal streptococci. The results seem to have been very good, and it is surprising that these methods fell into oblivion. Since the discovery of the scarlatina toxin immunisation by its means has been resumed on a large scale in America, Hungary, and Poland. There is at present no agreement with regard to the dosage. The skin test dose is generally accepted as the toxin unit, but the amount used for immunisation differs widely. The total number of children inoculated with scarlatina toxin all over the world may already amount to 100,000. The results agree in showing that the experimenters have succeeded in changing a formerly positive Dick test into a negative one in 50–80 per cent. of the cases. It will need a longer period of observation to determine whether a protection against natural infection is also attained by this immunisation.

THE TREATMENT OF RHEUMATIC CARDITIS.*

By GEOFFREY BOURNE, M.D. Lond.,

SENIOR PHYSICIAN, EAST LONDON HOSPITAL FOR CHILDREN, SHADWELL; CHIEF ASSISTANT TO THE CARDIOGRAPHIC DEPARTMENT, AND CASUALTY PHYSICIAN, ST. BARTHOLOMEW'S HOSPITAL.

THE treatment of rheumatic heart disease is doubly discouraging; long-continued efforts so frequently appear to have been wasted, and the patients themselves are often the brightest and most cheerful of those in a children's ward. There is a very real danger, therefore, of feeling that whatever is done the outcome is likely to be the same, and of allowing one's efforts to relax. Only by holding to first principles and by refusing to be disconcerted by the long list of failures are the best results likely to be obtained.

In the treatment of active infective disease there are two objects: the removal of the causative agent and the amelioration of symptoms. Seeing that the cause of acute rheumatism is as yet unknown, although streptococci are suspect as accessory, if not as primary agents, attention is of necessity directed to the second of these aims. The primary object of treatment will be made most clear by considering two main factors which interact throughout the duration of the disease. They are (1) the continuous

* A post-graduate lecture given at the East London Hospital for Children, Shadwell.

nature of the infection, and (2) the situation of the lesion. Infection in acute rheumatism is a continuous process. Occasionally the disease seems to run a clear and well-defined course, but more often it is insidious in its onset and treacherous in its simulation of quiescence. During this period of activity, which may last for many months, the virus is continually at hand and ready to take advantage of the slightest opportunity. Evidence of this is found in the continued fever, the leucocytosis, and the periodic outcropping of nodules. The other factor is the situation of the lesion. The valvular lesions occur almost invariably along the line of apposition of the cusps. The pericardial lesion, by its very definition, is found where the visceral and parietal layers rub. The articular lesions are similarly situated at points open always to mild trauma. The nodules occur where the elbows, ankles, and knees are most exposed to knocks or pressure, and where the occiput and spine meet the pillow and mattress. Nor is it unreasonable to imagine by analogy that the lesions present in the substance of the myocardium are similarly affected by stress and pressure, though in this case the exact physical determinants are less easily analysed. The myocardial disease is, of course, the ultimate factor in prognosis, but that of the valves is more easily visualised, and is more readily used as an example.

Continued mild trauma and continued infection thus seem likely exciting causes of those permanent lesions, the cumulative effect of which gives acute rheumatism its chief fatality. From this it follows that, if the infection cannot be suppressed, attention should be continually directed to reducing trauma. Rest during the period of active disease is imperative. A reduction in the pulse-rate of 10 beats per minute means that the inflamed cusps are snapped together 14,400 times less in the 24 hours, and a reduction in the pulse-rate from 130 to 80 saves them from 72,000 collisions in the same period. The cumulative saving of 10 beats per minute for three months cannot be over-estimated. Expressed in percentages, a saving of 10 beats per minute, the rate falling from 90 to 80, means a reduction in the total number of beats occurring in 24 hours by nearly 9 per cent., and a saving of 50 beats per minute, the rate falling from 130 to 80, means a reduction in the 24-hourly number by 26 per cent. These figures also apply to the saving in the stress and pressure which probably involve the equally important myocardial lesions during systole.

The diminution in rate has other interdependent results: diastole is prolonged, the total time spent in systole is shortened, and the cardiac work is reduced to a minimum. During diastole the heart muscle-fibres receive their nutritive coronary blood-supply and eliminate waste products; thus a shortened diastole, or a faster rate, encroaches upon the time available for this. If we apply these principles to treatment the canon that emerges is that *the heart-rate must be kept as low as possible during activity.*

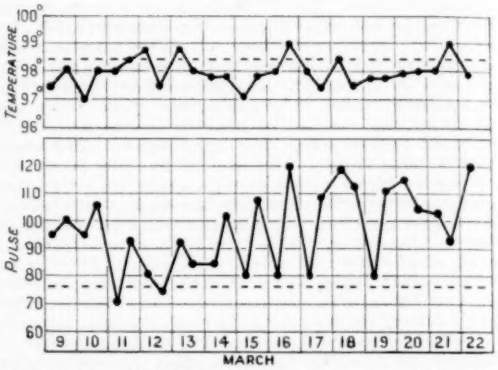
The Assessment of Activity.

The activity of rheumatic carditis is assessed by attention to the following points: Presence of nodules; presence of fever; presence and type of tachycardia; cardiac dilatation; presence of a leucocytosis; variation in the hæmoglobin percentage; appearance of the patient; and electrocardiograph tracing.

Nodules.—The appearance of rheumatic nodules is to be taken as indicating that active rheumatic carditis is present, their presence that an active rheumatic carditis is either present or very recent. Their significance is not altered in the absence of fever. Nodules are more easily seen than felt, especially when small. The elbow, for example, should be held flexed in a good oblique light and the skin made to slide over the deeper tissues; the nodules are often seen to move slightly under the sliding skin. In doubtful cases the two sides should be compared.

Disappearance of nodules does not necessarily mean that the disease has become quiescent, though it usually suggests an abatement. (See Fig. 1.)

FIG. 1.



The chart of a child suffering from active rheumatic carditis. Both temperature and pulse curves prove the presence of activity. The irregular variation in the former, although a higher reading than 99° is not reached, is significant.

Fever.—The temperature chart in active rheumatic carditis has two characteristics; pyrexia is usually present in spite of adequate salicylate administration, and the temperature curve shows unusual changes in level. Fever is significant, even when the readings reach such unsensational figures as 98·8° or 99°. The changes in level are most readily appreciated from the chart, and frequently occur in an apyrexial patient. Absence of fever does not necessarily indicate that the disease is quiescent. Nodules may appear in an apyrexial patient. The phrases "bed fever" and "constipation fever" are sops to conscience.

Tachycardia.—The spikiness of the pulse chart during activity is even more striking than is the irregularity of the temperature curve. To appreciate it, it is necessary to chart the pulse-rate properly. The practice of writing a double line of figures at the bottom of a chart is merely a means of hiding valuable evidence. In most cases of active carditis the pulse-rate varies very greatly within a few days, producing a curve like a silhouette of some mountain range. With quiescence the undulations become milder and ultimately vanish.

Cardiac Dilatation.—The relative position of the apex beat from time to time, as measured in inches from the mid-line, is of considerable value in estimating activity. A dilating heart in acute rheumatism is inevitably a poisoned heart, and one diminishing in size is as frequently one whose freedom from toxæmia allows tone to be re-acquired. Should the position of the apex beat remain unchanged, no conclusion one way or the other can be drawn. Two sources of fallacy must be borne in mind. An adherent pericardium may fix the apex beat, and a full meal may, in a child, displace it to the left by as much as half an inch. All measurements are, of course, taken with the patient lying flat on the back.

Leucocytosis is an almost constant finding in active acute rheumatism.[1] It is seldom very high, figures near 12,000 being usual, except with the onset of an acute pericarditis, when considerably higher values occur. The persistence of even a mild leucocytosis is strong evidence that the disease is still active; its absence is unusual, but does not necessarily indicate that infection has ceased. The persistence of a leucocytosis in the absence of any other sign or symptom of activity suggests recrudescence.

Hæmoglobin Percentage.—Nearly all cases of active rheumatism have some degree of chlorotic anæmia. Weekly estimation of the hæmoglobin percentage is a

[1] Swift, H. F., Miller, C. P., and Boots, R. H.: Jour. Clin. Investig., 1924–25, i., 197.

valuable, accurate, and easy means of obtaining evidence upon the progress of the case.

Appearance of Patient.—There is no doubt that the facial expression and appearance of a patient in whom the disease has become inactive is often characteristic. There is an absence of puffiness and of the fevered, slightly emotional expressions that flit across the face of the rheumatic child. The appearance suggests calm, relaxation, and comfort.

Electrocardiograph Tracing.—A mild degree of heart-block is not uncommon in the active stages of acute rheumatism. It is manifested by a prolongation of the P–R interval to 0·2 seconds or more. If present and frequently measurable, it will be an additional check upon the prognosis of a still active lesion. Its absence is of no help in assessing the presence or degree of activity.

Relation of Signs of Activity to Treatment.

If one or more of the above signs of activity be present in a patient recently diagnosed as suffering from active rheumatic carditis, they should be carefully followed until one and all have disappeared. Persistence of any of them indicates that the patient should be confined to bed. The time of final disappearance of the last sign should be noted, and ideally the patient should lie flat in bed, with one thin pillow, for at least another two months. At the end of this period further steps may be taken at intervals of a week. These are, in order, an allowance of extra pillows, sitting up for half an hour, for an hour, and so by gradations of half an hour up to three hours. During this time massage of the legs should be instituted. Finally the patient is allowed to walk. First a few steps to a chair only are taken, and by degrees more and more exercise is allowed. If facilities exist and the climate permits, these stages of treatment can with advantage be undergone in the open air.

Steady progress in convalescence is only possible in patients who show none of the signs of activity. Should any one sign reappear, the patient should go back to bed and recommence the unabridged programme.

Prevention of Tachycardia.

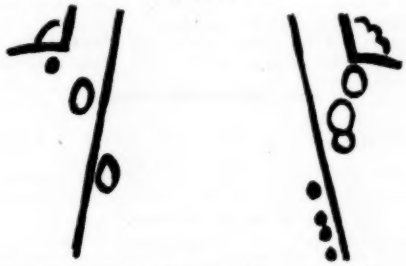
Rest in bed, with one flat pillow, is the only way of keeping the pulse frequency at its lowest figure. The known causes of physiological tachycardia (exercise and emotion) must, of course, be avoided. There is no drug upon which reliance can be placed to produce a bradycardia. Digitalis [2] will occasionally do this, even with a normal cardiac mechanism, but the effect is infrequent and sometimes transitory.

The Tonsils.

One of the known facts in the pathology of acute rheumatic carditis is the close relation it bears to tonsillar disease. This is so generally accepted that there is no need for further elaboration here. The value of tonsillectomy as a preventive is, however, still under dispute. The practice at the East London Hospital for Children is to remove the tonsil when there is evidence of tonsillar disease, provided the rheumatism is sufficiently inactive. The measure is not devoid of danger, and great care is necessary in estimating the risk of lighting up a fresh spell of infection. The guiding principle is the degree of active carditis, as deduced by the criteria already described. Considerable experience is necessary and each case must be judged individually. The points to be considered in determining whether or not tonsillar disease is present are (1) the history of sore throats, (2) an associated lymphadenitis, (3) the appearance of the tonsils.

A history of sore throats is significant when they have been frequent, or where a rheumatic attack definitely began with them. Any enlargement of lymphatic glands in the neck is to be carefully watched for, and it is wise to examine the neck from behind. Three areas are specifically palpated: just beneath the angle of the jaw, between this and the anterior border of the sternomastoid in the upper third of the neck, and behind the posterior border of the muscle in the lower half of the neck. Any abnormalities are charted, and their variation watched from day to day. In this way it is often possible to decide whether there is an active tonsillar lesion or not. Infections of the scalp, teeth, and middle ear must, of course, be excluded. Changes in the size of the lymphatic glands are charted in the manner shown in the diagram. The two short-angled lines indicate the angles of the jaws, the two oblique lines indicate the sternomastoids. The line enclosed in the jaw angle represents the tonsil, and the lymphatic glands are also shown. Sizes and consistency can be indicated, a black spot marking a hard and a circle a soft gland. An individual soon invents his own formulæ for size and hardness. The exact condition can then be charted in a few seconds with a minimum number of strokes. (Fig. 2.) The size and appearance of the tonsils are valuable criteria if abnormalities are present, but disease may exist even though the tonsils are not enlarged and look superficially healthy. Points indicating disease are enlargement, redness, raggedness of surface, and pus in the crypts. Tonsils should be considered diseased if the history is characteristic or if there is evidence of glandular enlargement.

FIG. 2.



Left Side.—The left tonsil is smooth and slightly enlarged. Below the angle of the left jaw is a small hard gland, lower and between it and the sterno-mastoid is a larger soft gland; lower still and posterior to the muscle is another similar gland.

Right Side.—The tonsil is large and its surface is irregular. Beneath the angle of the jaw is a large soft gland, and between it and the sterno-mastoid two similar glands adherent to one another; lower and posterior to the muscle is a string of hard, shotty glands.

The outstanding danger of tonsillectomy in a rheumatic child is the possibility of lighting up a dormant acute rheumatism. If a state of sufficient quiescence has not been reached, the operation may be followed immediately by fever, tachycardia, cardiac dilatation, and the appearance of a fresh crop of nodules. I have seen three cases of acute rheumatic pericarditis arising in this way; the harm done far outweighs any theoretical benefit. If, however, a state of sufficient quiescence has been attained, and if adequate salicylate dosage is given before and after tonsillectomy, such troubles can be avoided. The dose should be grs. 15–20, with double the quantity of sodium bicarbonate, two-hourly by day, and four-hourly by night if the patient is not asleep. A potassium permanganate gargle is freely used.

Other Measures.

Sodium salicylate is the only drug known to have an effect upon acute articular rheumatism. Evidence has been adduced to prove both that it has and that it has not an effect in the cardiac type of the disease. In my experience it certainly does no harm. It seems to lessen to some extent the number of recrudescences in children attending as out-patients, and on the whole it is valuable in the treatment of the active cardiac infection. The doses given to in-patients are grs. 10–20 two-hourly, with twice the amount of sodium bicarbonate.

Gargles are invariably given, and most children quickly learn the art of using them. Potassium

[2] Sutherland, G. A.: Quart. Jour. Med., 1918, xii., 183.

permanganate is probably the best; it is easy to carry in the form of crystals, and these are dissolved by the patient or the mother in warm water until a light red colour is obtained.

These two forms of treatment have proved their value. Others which have here been given an extended clinical trial in acute and subacute cases during the last eight years are: vaccines, protein shock, the intravenous disinfectants (flavine, gentian-violet, and neokharsivan), and artificial sunlight.

A series of patients were treated with sensitised and desensitised vaccines, with the collaboration of Dr. Mervyn Gordon on behalf of the Medical Research Council. The vaccines were prepared from streptococci derived from post-mortem material of cases of the disease. No encouraging results were obtained.

Protein shock was only tried in four cases, doses of 25–100 million typhoid bacilli being given intravenously. Since each case showed more signs of activity afterwards, no further investigations were made.

Intravenous flavine was given to 12 chosen patients and intravenous gentian-violet to another 12; neither form of treatment had any effect. Intravenous neokharsivan is now under trial.

Artificial sunlight was given to six chosen cases; three were definitely worse and the others were unaffected.

INTRINSIC CANCER OF THE LARYNX.

THE OCCURRENCE OF IMPAIRED MOBILITY OF THE AFFECTED CORD AND ITS VALUE IN DIAGNOSIS AND PROGNOSIS.*

BY SIR STCLAIR THOMSON, M.D. LOND.,
FELLOW OF KING'S COLLEGE; EMERITUS PROFESSOR OF LARYNGOLOGY IN KING'S COLLEGE HOSPITAL.

IT is a truism that stereotyped errors or exaggerations in medicine are difficult of eradication. This is my excuse for returning to the subject of impaired mobility in intrinsic cancer of the larynx.[1] The present observations are based on 70 cases operated on through a laryngo-fissure.

Historical Survey.

The occurrence of this valuable symptom appears to have been first noted by Lublinski [2] and Semon [3] about the same date. In 1886 Semon unfortunately committed himself to the statement that a malignant tumour causes "a considerable impairment of the affected cord at a very early period, and is one of the most valuable and constant points of differential diagnosis." Twenty-one years later, as the result of further experience, Semon saw the need of modifying this opinion considerably [4] but, unfortunately, it had then become embedded in the text-books, and it was difficult to diminish the exaggeration which the weight of his authority had established. His earlier and somewhat misleading opinion is still widely held, so that cases are often dismissed as "quite innocent," or are not referred to an expert in time to secure a lasting cure with a useful voice (by the laryngo-fissure route of operation), simply because "the cord moves quite freely."

I propose to show that interference with the movement of a vocal cord affected with cancer is an occasional symptom, and one of much value, but that it is not an early nor a frequent one.

Author's Material.

My conclusions are based on cases (*a*) operated on by laryngo-fissure, (*b*) with the diagnosis verified in every instance by the microscope, and in which (*c*) the after-history of each case has been followed up to the present date, or until the patient's death. They cover a period of 28 years. Cases which were only seen in consultation, or not operated on, or operated on by other routes, have been left out of consideration. I have had 70 such cases. Mere mechanical interference with the excursions of the affected cord, due to the projection of the growth, was noted when it was present, but is not here included as an instance of impaired, intrinsic mobility.

In these 70 cases the affected cord was quite mobile in 39. In 21 cases the mobility was more or less impaired, being described as "flagging," "sluggish," "limited in movement in anterior (the usually affected) half," or "hardly any movement." In 10 cases there was no movement at all in the affected cord, and it was described as "quite fixed." Thus, in 39 cases, more than half the total, this symptom of impaired mobility was entirely absent.

In five cases paresis developed while under observation. In some it was noticed a month after the first inspection; in others at varying intervals, even up to nine months. (This last case was successfully operated on and survived ten years to die of tubercle.) Where the diagnosis is doubtful, particularly where a biopsy is decided against and a case is being kept under observation, it should be carefully scrutinised once a month to detect any onset of this symptom.

Deductions.

Any defect of movement in a vocal cord, due to cancer, is caused by the neoplasm penetrating into the subadjacent intrinsic muscles. The more a growth projects above the surface, the less likely is this to happen. It is in such cases that a biopsy is often both practicable and, diagnostically, satisfactory. When the neoplasm is imbedded in a cord it tends to penetrate deeply and it is more difficult to obtain a satisfactory portion for section. It is in such cases that the occurrence of impaired mobility is a valuable symptom.

As regards Prognosis.—The occurrence of paresis in a cord, due to an infiltrating carcinoma, is of unfavourable prognosis. In my 39 laryngo-fissures on a mobile cord, two must be left out of account, as they were only operated on this year. In the remaining 37 cases no less than 31 were free from disease at the end of three years (=84 per cent.). Of the cases with impaired movement 15 out of 20 passed the three-year limit without recurrence (75 per cent.). In 10 cases, in which the cord was quite fixed, one died from other causes within 18 months. Of the remaining 9 cases, with complete fixation of the cord, only 4 were free from recurrence three years afterwards (=44 per cent.). Of these cases, 3 died from other causes five, seven, and ten years later. One is still alive and well 11 years afterwards.

As regards Treatment.—Free mobility of a vocal cord affected with carcinoma would indicate the suitability of operation by the laryngo-fissure route, particularly if the disease has not extended to either extremity of the cord and the subglottic area is free. Under the same conditions, a simple paresis or impairment of movement does not contra-indicate the same operation. The removal should be as wide as is possible and the larynx should be carefully and regularly scrutinised once a month during the subsequent year, as any recurrence can be successfully dealt with by a partial or complete laryngectomy.

When the cord is quite fixed, and the disease does not invade either extremity, the same plan of treatment can be successful. Even when, under the same condition, the subglottic space is invaded, a lasting cure may, with the same method, be secured. But if, with a fixed cord, the disease has extended to the base of the arytenoid posteriorly, or crossed the anterior commissure, or extended to the ventricular band, or to the epiglottis, or (downwards) as far as the cricothyroid membrane—some more extensive operation is required.

* Read before the International Congress of Oto-Laryngology, Copenhagen, July 30th–August 1st, 1928.

[1] StClair Thomson: Intrinsic Cancer of the Larynx: Impaired Mobility of the Affected Cord, THE LANCET, 1920, ii., 183.

[2] W. Lublinski: Berlin Klin. Woch., Feb. 22nd, 1886, p. 122.

[3] Heath's Dictionary of Practical Surgery, London, 1886, i., 895.

[4] Trans. Medical Society, London, 1907, xxx., 113.

Summary.

1. Impaired mobility of a vocal cord is not a necessary nor an early symptom of intrinsic cancer of the larynx.
2. It is met with in less than half (about 44 per cent.) of the cases presenting themselves as suitable for operation by laryngo-fissure.
3. It is more apt to develop in an embedded or infiltrating neoplasm than in a distinctly sessible or projecting growth.
4. When present it is a valuable symptom in helping to distinguish a malignant from an innocent neoplasm. It is of little value, and may even be misleading, in diagnosing a malignant growth from a tuberculous or syphilitic deposit.
5. Its absence is of good augury and hence the desirability of making an early diagnosis before it has developed. As regards prognosis, its presence is an unfavourable symptom.
6. Its absence or presence is a valuable factor—in conjunction with other data—in determining the most suitable treatment.

THE ENLARGED PROSTATE AND ITS NON-OPERATIVE TREATMENT.*

By F. HOWARD HUMPHRIS, M.D. Brux., F.R.C.P. Edin., D.M.R.E. Camb.

Few diseases from which men of middle or advanced age suffer have so tried the skill of the physician and the endurance of the patient alike as enlargement of the prostate gland. It has been estimated that one in every three men over 60 complains of symptoms caused by an enlarged prostate, and to these sufferers must be added others in whom the enlargement "gives rise to no appreciable symptoms." An enlarged prostate causes local troubles connected with urination, and also, owing to its reciprocal relation with the cerebro-spinal centres, to neurasthenic symptoms. Indeed, Dr. Snow stated that the prostate should usually be examined in men suffering from neurasthenia. Mental sluggishness often accompanies enlargement, and sometimes the only symptom of a chronic prostatitis may be inactivity of the mind. The symptoms for which the patient seeks medical advice arise from the mechanical obstacle to the urinary flow. He often has to strain before the flow can be established, and when the act is apparently finished some more urine dribbles away, often a few minutes after the patient thought his bladder was empty. The time occupied in passing water gradually becomes longer. Nocturnal urination and frequency of micturition are common. When a patient has these symptoms, apart from his discomfort, he is not free from danger. The bladder has lost some of its tone and it is usually distended, so that attacks of cystitis are not uncommon. The patient is liable to attacks of complete retention of urine or to septic poisoning. In the great majority of cases he is instructed in the art of passing a catheter, and his catheter life begins; it would be a bold man who characterises this as either free from risk or a pleasant prospect.

Drug and Gland Treatment.

Drugs are of little use except to relieve the symptoms of irritation, to improve the condition of the urine, or to combat complications, such as hæmorrhage. Cases have been reported of an enlarged prostate, one an ordinary senile enlargement and another a traumatic inflammation in a young adult, in which the administration of ergot (liq. ext. ergotæ, 5j.) four-hourly, and later, night and morning, apparently reduced the size of the prostate. Organotherapy in this country has not been used to the extent which theoretically it deserves; in France it has been almost a routine treatment for nearly ten years. The argument for the use of prostate extract was based on a theory which may be roughly outlined as follows:—

The fact that prostatic hypertrophy quite commonly follows the functional retirement of the testes has caused many observers to believe that there is some relationship between the endocrine activities of both these glands. It is believed that when the testes become functionally inactive the prostate becomes enlarged in a compensatory fashion, just as other ductless glands enlarge when closely related glands are put out of commission. It is generally accepted that, when deep-seated infective processes and essential new growths of the prostate gland can be excluded, there remains a form of enlargement of the prostate gland which is closely related to waning gonad function. This should theoretically respond to treatment by organotherapy, which would supplement the endocrine function of the testes and thereby lessen the probable necessity for over-activity on the part of the prostate. The extract is administered in capsules, grs. 1½ of the dried extract, and in ampoules containing the equivalent of this dose in a physiological salt solution.

Surgery has without doubt saved many lives and relieved this condition, with operations such as prostatectomy and castration. A masterly epitome of the relation of surgery to this disorder may be found in the Bradshaw lecture given before the Royal College of Surgeons of England by Sir Cuthbert Wallace.[1]

Electrical Treatment.

Electricity will usually give rapid relief (Roger), and in some cases complete relief, from all symptoms. The use of electricity is comparatively little known, since it is mentioned but rarely, and then only in terms of disparagement, a typical sentence reading: "So far it must be conceded that electricity, radiotherapy . . . yield very incomplete, fugitive results."—(Dr. G. Marion, Paris.) I have had experience of electro-therapeutic measures in the treatment of enlarged prostate for over 25 years, and have found, and am finding, them daily of the greatest service.

The three forms of treatment which I am about to describe are: (1) the static wave current; (2) X rays; and (3) diathermy.

Histologically, the enlargement is a proliferation of the constituent elements of the prostate, but in all forms of prostatitis the consistence is less firm and the texture somewhat more open and spongy. There is more fluid than natural in the gland tissue; the mucous membrane may be thinner and more vascular and the duct orifices larger. This mechanical obstruction requires a mechanical means to remove it, and nothing can compare with the static wave current, which was accidentally discovered by Dr. W. Benham Snow some 30 years ago when he was treating an intrapelvic neuritis. The patient had a large, tender prostate, which was found to be softened and reduced in size after the application of the electricity, and Dr. Snow says that no work he has done since has given him greater satisfaction. In 1902 Dr. Snow gave me the benefit of his experience, and since then I have used his method continuously, and can recommend it with confidence. The very nature of the disease makes it peculiarly suitable to the action of the static wave current. We have a structure which is partly glandular and partly muscular. We can place an electrode alongside the diseased structure and apply the current almost directly to the pathological gland. Muscular contractions are induced, the gland tissue is contracted, and the products of inflammation are squeezed out. These accumulations having been mechanically expelled, a tonic circulation is restored to the gland by the electrically stimulated cell activity. Each successive treatment gives more and more power to the muscle-fibres and more tone to the glandular structure, leaving the gland smaller and of more normal consistence until there is little left but healthy muscle-fibre and healthy gland

* Paper read at the Second International Congress of Radiology at Stockholm, July 30th–August 1st, 1928.

[1] Brit. Med. Jour., Nov. 19th, 1927.

tissue, except in those very long-standing cases where the hyperplastic fibrous tissue still persists.

The treatment discovered by Snow remains practically the same to-day. The details are as follows:—

A metal electrode is passed into the rectum and pressed against the gland. It is attached to the positive side of the machine, the negative being grounded. The sliding rods, touching each other at first, are gently and slowly opened according to the toleration of the patient. The treatment continues for 20 minutes. The effect on the prostate tissue is strictly mechanical, and there is no electrolytic or thermic action. When the current is applied with a metal electrode in the rectum over the prostate gland it causes alternate recurrent contraction and relaxation of the tissues. The current is regulated in the rate of discharge at the spark gap by controlling the speed of the machine, so that the periods of contraction alternate with the periods of rest at the rate of 120 or so to a minute. The sinusoidal current from the morse wave generator—the wave water interrupter of Turrell and the de Wattville current, or the Smart-Bristow coil with hand interruptions—may be used when a static machine is not available, but no current can replace the static.

It occurred to me that sparking the prostate should have an especially good effect in obstinate cases, and therefore I had made an ordinary metal prostatic electrode on a vulcanite handle. Thus, on the principle of Snow's spark director, a spark applied to the knob would have the effect of a spark applied to the gland. In all sparking the spark gap should be wide open, the negative side of the machine connected to the platform by means of the shepherd's crook, and the positive side and the ball attached to separate groundings. I cannot say, however, that this gives any better results than the ordinary static wave current.

Patients often remark, even at the end of the first treatment, that the perineal sense of weight is less, and after daily treatment for a week or ten days and tri-weekly séances thereafter for a month or six weeks, the congestion and engorgement have disappeared, and with them the pain, discomfort, and necessity for getting up at night. The condition of the bladder has also improved, and I am inclined to attribute this, in part at least, to the stimulation of those unstriped muscle-fibres which continue to the bladder. These fibres have to be stimulated to contract, and with this exercise would naturally acquire more power and tone, not only in their prostatic portion but in their vesical part as well, and would thus give more muscular force to the bladder and greater power to get rid of urine.

Often after one treatment the gland is reduced in size, loses its tenderness, and is softened throughout its entire structure. The treatment should be given often enough to prevent a relapse—probably daily. As the gland grows smaller and softer the subjective symptoms grow less and less until they disappear entirely.

In the very aged, or where there is much fibroid tissue, we can only hope for an abatement of the inflammatory process, but even here we get a marked improvement in the tonicity of the unstriped muscle-fibre, both prostatic and vesical. In other cases, even where the condition has lasted for a number of years with cystitis and difficult micturition, we get an improvement so marked with the forcing out of the infiltrating exudates that in the patient's estimation it amounts to a cure.

Until seven or eight years ago, for cases where infection complicated the enlarged prostate, I used glass vacuum electrodes energised by the static machine and connected to the negative side of the machine, the positive being grounded. My theory was that a germ-destroying effect was produced.

Iodine and thiosonamin have been administered by ionisation, but the results have been disappointing. Both these methods were introduced by Neiswanger, who lays down the following rules:—

A large sized prostatic gum-elastic catheter is used in which is a galvanised iron wire stylet; round this is loosely wrapped some cotton-wool soaked in a solution of thiosonamin. The end of the catheter is provided with numerous perforations. The instrument is attached to the positive pole, with the negative pole connected to a large abdominal pad. About 10 milliampères are allowed to flow for ten minutes every fourth day.

I have little practical experience of this method, and have found it inferior to other forms of treatment.

A Typical Case.

A man of 65 consulted me on Sept. 22nd, 1911. About six or seven years previously he had noticed frequency of micturition, especially at night. This had apparently got a little better, but lately it had troubled him acutely. He got up at least five times a night to pass water; he could retain urine for four hours at a time during the day, but it was more comfortable to pass it every two hours or so. He also complained bitterly of a second involuntary flow some minutes after finishing micturition, of discomfort before and after micturition, and of a dragging sensation during the day. He also had a pain in the back, which he called lumbago. Physical examination showed that an enlarged and fairly hard mass, the size of a hen's egg, occupied the whole of the prostate. There was nothing in his history or general health to call for comment, except that he had never had any venereal disease.

Treatment was instituted at once with the static wave current on the prostate, and after 20 applications was discontinued on Nov. 9th, the prostate being about half the size that it had been on Sept. 22nd. The records for these days were as follows:

Date, 1911.	Retired to bed.	Disturbed for micturition.	Date, 1911.	Retired to bed.	Disturbed for micturition.
Sept.	P.M.	A.M.	Oct.	P.M.	A.M.
22	11	No change.	19	11.45	4.30, 6.30
23	11	,,	20	10.45	1.45, 6
24	11*	,,	21	11	2.30, 6.30
25	11	4.30	22	11	2.30, 6
26	10.30	4	23	11	3.15, 6.45
27	11	12.30, 4, 5.30	24	10.45	3.15, 5
30	10.30	5	25	10.45	5.30
Oct.			26	11.15	3.30, 6.30
1	—	1.30, 3, 4.45, 6	27	11.15	1, 5.30
3	—	3.15, 5	28	11.15	4.45
4	—	5.45	29	11	3.30
5	—	1.30, 3, 4, 5, 6	30	11	2.30, 4.30
7	—	1.45, 6.15	31	11.15	3.30
8	—	4.45	Nov.		
9	—	2.5	1	11.15	3.45
10	—	4.30, 6.30	2	11.15	6.15
11	11.45	3.15, 5.30	3	11.15	6.30
12	11	5.30	4	11.30	7
13	11	4	5	11	5
14	11	3, 6	6	10.45	2, 6
15	11	12.15, 1.45	7	12	6.30
16	11	3.15, 6.15	8	11.15	4.30
17	12	4.15, 4.45	9	11	4
18	10.45	5.30			

* Discomfort after micturition less. "Lumbago" pain gone. Frequency of micturition the same.

The patient arose each morning at 7.30 and passed water. From the end of October he was disturbed but once nightly.

X Ray Treatment.

Much benefit has been obtained by the use of X rays, but cases must be carefully selected. The simple adenomas are extremely sensitive, but the presence of fibrous tissue reduces the sensitivity, so that adenofibromas and fibromyomas react in inverse proportion to the amount of fibrous tissue present. When the prostate is large and soft, good results can be expected, but X rays are of little value in the treatment of hard, bossed glands elevating the floor of the bladder. Suitable cases respond rapidly; the nocturnal frequency is diminished after only a few irradiations, and a reduction in the size of the gland can soon be appreciated. Cystitis is a contra-indication to X ray treatment, as a severe exacerbation is likely to follow the application of the rays.

Technique.

I use only one port of entry—the perineum. The treatment may be given with the patient lying on his side on a couch, but I have found it more convenient to use a special stool, like a high office stool, which can be placed over the X ray tube. In the seat is a circular aperture, 4½ inches in diameter, through which the rays are directed. When the patient is seated on the stool the perineum can be accurately centred and the cheeks of the buttocks easily separated and main-

tained in position. The testicles are protected by a layer of lead rubber fixed to the seat.

The best results are obtained with rays of moderate hardness in divided doses. I use an 8-inch equivalent spark gap with 2–3 mm. aluminium and ¼-inch boiler felt as filters. Six doses of 1/6 B. are given over a fortnight, and the treatment is repeated at the end of six weeks. Two or three series are usually sufficient, but I have many patients who come twice a year for a single course as a prophylactic against recurrence, even though they may not be worried at the time by frequency or other symptoms of enlargement.

Diathermy.

So far, only non-infective prostatitis has been considered. In cases of gonococcal prostatitis diathermy is the treatment to be adopted. Its value has been pointed out by E. P. Cumberbatch, whose experience and writings on the subject have been of the highest value. The rationale of the treatment depends upon the power of the diathermic current to destroy the bacilli *in situ*. The temperature which will kill the micro-organism is one which is harmless or even beneficial to the tissues.

For the modern technique we are also indebted to Dr. Cumberbatch. He has perfected electrodes containing a thermometer which registers the heat which exists, or has been produced, by the current at the junction of the instrument and the mucous membrane. The electrode is inserted in the rectum, so that the prostate gland rests upon the head of the electrode when the patient is lying on his back. The electrode is attached to one terminal of the diathermy machine and the other terminal is connected to the indifferent electrode, for which I use a metal pad placed on the abdomen. Cumberbatch uses a belt of sheet lead 3½ inches wide and 4 feet long. This "is placed around the pelvis and the overlapping ends are passed through a stout wire loop and bent back so that the belt holds firm and even contact with the skin." Whichever indifferent electrode be used, the current should be turned on and increased very slowly, a sensation of heat but not of pain should be produced; if the patient complains of pain the current should be reduced until he is absolutely comfortable. This will usually be at a temperature of 106° F. or slightly higher, though at the first treatment 104° or 105° F. should be the maximum. The treatment should be of 20 minutes' duration, and be repeated every other day.

With these three forms of treatment, and a sufficient intelligence on the part of the patient to obtain medical advice before it is too late, the different types and degrees of enlarged prostate will cease from troubling, and the middle-aged man will have his rest at night undisturbed.

ALEUKIA HÆMORRHAGICA: MYELOPHTHISIS.

WITH A REPORT OF A CASE.

BY W. J. S. REID, B.Sc., M.D. ABERD., M.R.C.P. LOND.,

HONORARY PHYSICIAN, ANCOATS HOSPITAL, MANCHESTER.

CASES showing a hæmorrhagic diathesis are extremely difficult to place in their proper groups, and although the diagnosis of purpura hæmorrhagica may be sufficient to label the case, I think attempts should be made to separate the groups. Frank [1] has described cases which he considers are worthy of a separate name and classification as aleukia hæmorrhagica, and this case seems to correspond with those he describes.

The patient was 20 years old, a plasterer.

Family History.—Father and mother alive and well. No history of any blood trouble. Two brothers alive—perfectly healthy, but pale and anæmic-looking. Mother is also pale, and sons "took after her" in appearance. No history of any illnesses.

Previous History.—Perfectly healthy. Never lost a day's work through illness, and was a particularly energetic and efficient worker in his father's employ.

Present Illness.—Eighteen days before consulting his doctor he felt a little out of sorts, languid and vaguely tired. He noticed a few spots, like small blood vesicles, under the skin, but continued his work for a fortnight. At the end of this time the spots had faded, but a few more appeared and his urine contained blood. His doctor sent him to bed. There was a small subconjunctival hæmorrhage and some oozing from the fauces. He had a small superficial cut on the left middle finger which had not healed as quickly as usual, but he and his father were positive that the spots preceded this by 10 or 12 days, during which he continued work. When I saw him, in consultation with Dr. G. Ferguson, of Oldham, he was pale and coughing up blood. Blood was oozing from the fauces, which showed much swelling and gangrenous-looking clot. The cut on the finger was covered by gangrenous clot. The blood had reappeared in the urine. He was given calcium lactate and two injections of normal horse serum of 20 c.cm. each, which failed to control the hæmorrhage. He was admitted to hospital next morning, when he was extremely pale and practically moribund. Blood was still oozing from the fauces and anterior nares and from the lower lip.

Blood Examination.—Red cells 1,200,000 per c.mm. No nucleated cells. Hæmoglobin index 0·8. Anisocytosis. No basophilic punctation. No polychromasia. White cells 1750 per c.mm. Polymorphonuclears about 9 per cent. Small lymphocytes 84 per cent. Large lymphocytes 4 per cent. Myelocytes and promyelocytes 3 per cent. Thrombocytes—platelets—very much reduced in number, under 1/6 normal. Coagulation time not examined. Blood type II. Widal and Wassermann reactions negative. No tubercle bacilli in sputum or growth on culturing the blood, but the throat swab showed many rod-shaped organisms; no diphtheria. Van den Bergh's reaction negative, direct and indirect.

300 c.mm. of whole blood from the father were transfused into the patient and improvement took place at once. Bleeding ceased almost immediately, and in a few days the finger healed up and the throat condition cleared almost completely. The submaxillary lymphatic glands on both sides, which were enlarged, diminished rapidly. No enlarged glands were found anywhere else in the body, and no enlargement of the spleen was elicited by percussion, nor was the spleen palpable. The liver was not enlarged. Hæmic murmurs were present, but there was no signs of any organic heart lesion. The urine contained a slight trace of albumin, but no blood.

Treatment.—Gargle of acid carbolic for throat condition. Novarsenobenzol painted on the sloughing area. An acid mixture containing dilute hydrochloric acid thrice daily. Calcium lactate thrice daily. Intravenous injections of N.A.B. 0·45 g. at four days' interval. Three injections in all were given and no obvious effect was seen. Epistaxis began four days after the transfusion and was controlled by plugging the nares. Three days later some hæmaturia also occurred, and, as the epistaxis still continued, a second transfusion of 200 c.mm. was given, the father again being the donor.

Daily examination of the blood during this period showed no nucleated red cells. Hæmoglobin index never exceeded 0·9, and the white cells averaged 1000 per c.mm. with the granular cells never above 9 per cent. Thrombocytic count never improved. On the day following the second transfusion the index was still 0·9. The total white count had risen to 1250 per c.mm., but the granular leucocytes still formed only 9 per cent. of the total. Next day the white cells fell to 1050 per c.mm., and the hæmoglobin index was 1.

Four days later the patient showed petechiæ of the upper eyelids and became restless and vomited. Lumbar puncture yielded normal fluid. The restlessness changed gradually to delirium; the eyes deviated to the right and then to the left and the pupils became inactive; breathing became stertorous with left facial weakness; left arm flaccid, but not completely paralysed; left leg completely flaccid and paralysed; tendon reflexes absent, with extensor plantar response. In right leg tendon reflexes increased and extensor plantar response was present. After three hours patient expired. During the stay in hospital the patient had a temperature varying from normal to 104° F. on one occasion, but the average daily swing was from 99° to 102°.

Post-mortem Examination.

Brain: Large petechial hæmorrhages were present over the vault of both hemispheres near the longitudinal sinus. Multiple hæmorrhages all through the cerebral substance. No blood in the ventricles. Cerebellum studded with minute hæmorrhages all over its surface and through its substance.

Thorax: No lung disease; some œdema of both bases. Pleural cavities contained a small amount of blood-stained fluid. Some petechiæ on pleural surfaces.

Heart: Pericardial sac contained about 10 oz. of blood-stained fluid. Two large ecchymoses were present under the endocardium. All the valves were healthy and there was no sign of any endocarditis.

Spleen: Weighed 5 oz.; appearance normal. Culture taken—no growth. Malpighian corpuscles were not undu prominent. No iron reaction.

Liver: Weighed 3 lb. Slightly fatty in appearance; capsules peeled normally. No perihepatitis. No iron reaction. In microscopic section slight necrosis seen in the centre of the lobules.

Gall-bladder and ducts healthy. Bile normal.

Kidneys appeared healthy except for some petechiæ in the substance and under the capsule. Adrenals normal.

Stomach and bowels were normal. A large old hæmatoma was found in the right iliac region behind the ascending colon and peritoneum. Appendix and caput cæcum healthy.

Thyroid normal. Lymphatic glands not enlarged except under the angles of the jaws; substance dark-coloured from blood resorption. Mediastinal glands not enlarged.

Bone-marrow: No red marrow present in humerus (upper end) or femur (upper end) or in sternum; substance cream-coloured in appearance. Medulla under microscope showed a complete absence of normal red cells, and no nucleated red cells or megakaryocytes were seen. No phagocytosis observed. The predominant cells were lymphatic. Much fat was present.

Summary of Case.

The striking features of this case are: the comparatively sudden onset of the illness and the complete absence of previous history of blood disease, or, in fact, of serious disease of any kind; the acuteness of the condition once started; the profuse hæmorrhages into the tissues and especially from the fauces, and the continued raised swinging temperature. Diagnosis is impossible in such a case without careful blood examination, and this places the condition within the group of diseases labelled aplastic anæmia. The case, clinically, gives the impression of an acute infective condition, which it may have been, but certain factors are against this. No organism could be isolated from blood culture and none from the spleen post mortem. The rise in temperature was definitely a later phenomenon than the petechial hæmorrhages. The foul condition of throat and lips, and of the small wound on the left middle finger, were at least a fortnight later than the petechiæ. The spleen was not enlarged and there was no enlargement of the lymph glands with the exception of the submaxillary glands, and this swelling was definitely a result of blood resorption and local infective material. Moreover, should an organism be isolated from the blood in such a case, it is by no means certain that it can be put down as the cause of the condition. Organisms are not uncommonly found before death, and in cases like that described, where the granular leucocytes are reduced to a minimum, organisms might exist in the blood as a result, and not necessarily as a cause of the agranulocytosis, which is really a breach of one of the body's defences.

Aplastic Anæmia.

"Aplastic anæmia," according to Hurst,[2]

"is the name given to a rare condition in which the bone-marrow cells cease to produce blood corpuscles in sufficient quantity to compensate for their destruction. In very rare cases it appears to be a primary condition. More frequently it is secondary to a primary hæmolytic anæmia in which the over-activity, which is the normal response to both hæmolytic and hæmorrhagic anæmia, leads to exhaustion; possibly the toxæmia, which is the cause of the excessive hæmolysis, also damages the bone-marrow. Primary aplastic anæmia is characterised by the absence of nucleated red cells or other evidence of activity of the bone-marrow in response to the anæmia."

In this description the author may have had chiefly in mind the red-cell-forming function of the bone-marrow, but when all the functions are taken into consideration the definition is very sound. The division of primary from secondary aplastic anæmia is evident, but further subdivision is necessary to distinguish the cases which compose the groups, as they exhibit very diverse clinical pictures. The function of the bone-marrow in health is the production of cells of various kinds, and the circulating blood may be regarded roughly as the mirror of its efficiency. The cells produced normally by the bone-marrow are the erythrocytes, the granular leucocytes of various kinds, and the thrombocytes, the so-called platelets. The work of Wright, to which very wide, if not universal, recognition has been accorded, showed that the thrombocytes are the product of the megakaryocytic cells of the bone-marrow. The old ideas that they were artefacts, or extruded or separated particles of the other cells of the blood, are untenable. The function of bone-marrow may be regulated by a hormone, as is tentatively advanced by Hurst. Where the hormone over-stimulates, the result is one of several conditions—e.g., polycythæmia rubra, or myeloid leukæmia; where the hormone is deficient we get aplastic anæmia. The theory is attractive in its simplicity and helpful, but it is merely a hypothesis, and hardly explains the selectivity of the hormone in its control over the production of the various cells. The truth is that the bone-marrow can be impaired or stimulated in some, or all, of its functions.

Frank,[1] in 1915, described a disease-picture, in which all the cell-forming functions of the marrow were reduced very gravely, and there was a profuse hæmorrhage. This he regarded as a separate disease, and gave it the name aleukia hæmorrhagica or myelophthisis. Schulz and Friedemann,[3] in 1922, described a condition which was also an aplastic anæmia with reduction of the granular cells in the blood with, however, glandular and splenic enlargement, but without the hæmorrhagic tendencies of the other. They named the condition agranulocytosis. Koehler [4] has fully described three cases of the aplastic anæmia type, two of which showed severe lack of all the marrow-formed elements of blood. Erythropenia, leucopenia, with relative lymphocytosis, and thrombopenia were present, and a prominent clinical feature was hæmorrhage from the mouth and fauces. In the third case the erythrocytes and thrombocytes were not reduced much from normal, and no hæmorrhages occurred. All three had raised temperatures and gave the impression of infection; no organisms were found, however, to explain the condition. Ellmer [5] has reported a case which agrees with the picture of aleukia hæmorrhagica as given by Frank and by Koehler, and with the picture of the case here reported. Schulz and Friedemann insist on the absence of thrombopenia and hæmorrhages in their description of the condition which they term agranulocytosis. This is most probably not a disease sui generis, but a stage of a disease, probably an infection leading to partial exhaustion of the functions of the marrow, of which the granular leucocytic-forming function seems to bear the brunt.

In the case now reported all the cell-forming functions have been disastrously affected, the only cells which exist in the blood in anything approaching normal condition and quantity being the lymphocytes, and they do not have their origin in the bone-marrow. The essence of the aleukia hæmorrhagica (which descriptive name may be used till ætiology is better known) is that all the functions of the bone-marrow are severely affected and hæmorrhage takes place from the fauces, which seems to be a site of election, but the hæmorrhages may be general. A raised temperature always accompanies the condition. It is a disease of unknown causation, and naturally can only be diagnosed after a very careful examination of the history of each case. Morawitz,[6] for instance, has reported a case of aplastic anæmia following typhoid fever, and Schilling [7] one case following sprue. One of the essential features of aleukia hæmorrhagica is the thrombopenia, which is associated with the hæmorrhages. This is quite in line with the modern conception that the thrombocytes are a great factor in influencing the coagulability of the blood. The faucial condition in the case under my care—of oozing and necrotic membrane formation—had, in my opinion, the same causation as the other hæmorrhages in the body, and was the result and not the cause of the blood condition.

Benzol stands out as the most frequent cause of injury of the bone-marrow, so much so that it has been introduced by Korányi in an attempt to reduce the number of granular cells in myeloid leukæmia, but given up because of the impossibility of controlling its effects. Radio-active thorium X has been used by von Plesch and Falta for the same purpose,

and given up for the same reasons—unreliability of action and impossibility of control. Over-response to Rontgen rays had produced the condition of aleukia hæmorrhagica, as recorded by Decastello, Ross,[8] Frank, and Whitby and Jackson.[9]

Treatment.

This is at best palliative. In view of the destructive changes in the marrow it cannot be otherwise. Where the cause is known, its removal, as in the case of benzol and X rays, is followed by regeneration unless the condition has gone too far. Where, however, the ætiology is unknown—i.e., in the primary essential aleukia hæmorrhagica—nothing seems to be of any service. Transfusion, as in my case, may cause a tremendous improvement for a little time—it brings the patient back almost from the dead—but at best its effect is only temporary. Removal of the spleen has been recommended for primary pernicious anæmia by Hoff,[10] Decastello,[11] Klemperer, and Hirschfeld,[12] Walterhöfer and Schramm,[13] and of late has been practised in this country in hæmorrhagic conditions where platelets are reduced to a minimum. In aleukia hæmorrhagica the reasons for the extirpation of the spleen, which are valid in both the above conditions, are present and cogent, but after serious consideration—there being no manifest enlargement of the organ—I decided against the operation. With a case less acutely ill the proceeding might be tried.

Summary.

The case described showed the following features. (1) An illness of fairly acute onset with petechial hæmorrhages—later hæmorrhages from the fauces and from the kidney. Death was due to hæmorrhages into the brain. (2) Temperature of septic type but later in onset than petechiæ. (3) No signs of regeneration in spite of severe anæmia due to hæmorrhages. (4) Leucopenia was present, granular leucocytes were practically absent from the circulating blood, and small lymphocytes formed a very large proportion of the total white cells present. (5) Reduction of thrombocytes to a minimum. (6) Absence of splenic and lymph gland enlargement. (7) Bone-marrow, examined post mortem, showed absence of erythrocytes, erythroblastic cells, megakaryocytic cells, and granular cells.

The condition is a clearly defined clinical picture and should be considered as a separate entity—aleukia hæmorrhagica or myelophthisis—and, pending further investigation, forms a subclass of primary aplastic anæmia.

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"PAY-BEDS" AT THE ROYAL NORTHERN HOSPITAL.—An anonymous supporter of this hospital has promised to give £35,000 towards the erection of a wing for pay-beds on the lines suggested by the report of the King's Fund on condition that an equivalent sum is raised before the end of the year. The Royal Northern claims to have been the first of the great London hospitals to provide these facilities. The same donor has given £1500 for the purchase of radium and £700 for a new electric lift.

Clinical and Laboratory Notes.

CEREBRAL EMBOLISM

DUE TO AN UNUNITED FRACTURE OF THE CLAVICLE AND SUBCLAVIAN THROMBOSIS.

BY A. GURNEY YATES, M.D. EDIN., M.R.C.P. LOND.
PHYSICIAN, SHEFFIELD ROYAL INFIRMARY;
AND
DENTON GUEST, M.B., CH.B., SHEFF.,
PATHOLOGIST, SHEFFIELD ROYAL INFIRMARY.

THE following case, though unquestionably rare, is of importance because it establishes beyond doubt the manner in which cerebral lesions are occasionally caused by bony abnormalities at the root of the neck, and in particular by cervical rib.

The patient was a woman of 41 who came to the out-patient department complaining of pain and weakness in the right hand and forearm, made worse by movement. It had lasted some months and was slowly getting worse. The hand was cold and bluish and no pulse could be felt anywhere in the limb. On examining the neck the right clavicle appeared to be fractured. She was unaware that she had fractured her clavicle, but she was an epileptic, though she had had no fit for several years. The Wassermann reaction was negative, and there was no evidence of any central nervous lesion. The radiogram showed quite clearly an ununited fracture of the right clavicle. It was suggested that the condition might be congenital, but if that had been the case the two fragments would have been in a line, which they obviously were not.

The case at once recalled that about two years ago at a clinical meeting of the Neurological Section of the Royal Society of Medicine, Dr. C. P. Symonds showed two cases of left hemiplegia associated with a cervical rib on the right side, and absence of any pulse in the right upper limb. The explanation suggested was that the pressure of the cervical rib on the subclavian artery had led to thrombosis, and that the thrombus had extended backwards to the point of junction of the right common carotid, and a portion of it, becoming detached, had formed an embolus in one of the branches of the left middle cerebral artery. If this explanation were the true one there was a risk of a similar occurrence in this case, and a surgical colleague was consulted as to whether any operation was advisable. Arrangements were made for the patient to come into hospital, but before anything could be done an embolus occurred. She was taken suddenly ill with pain in the head and throat, vomited, and said she could not see. She gradually became unconscious and incontinent. At first there was some weakness of the right lower face, but later this spread to the left side, which was blown out more than the right on expiration, and the left arm and leg became paralysed. Some movement still occurred in the limbs of the right side on stimulation. The plantar reflex on the left side was extensor, on the right flexor. The knee- and ankle-jerks were only just obtainable. The abdominal reflexes were absent. The coma became deeper, with paralysis of all four limbs, the temperature rose to 105° F., and she died seven days after the first onset.

Pathological Findings.

A full autopsy was performed upon this case in the usual manner and the findings recorded. For the sake of correlation with the clinical picture, we shall describe the pathological changes in the order in which we consider they arose.

Right Clavicle.—An old-standing ununited fracture at the junction of the middle and outer thirds was present, with fibrous union and the formation of a false joint. The free ends were quite smooth and were displaced backwards and slightly downwards towards the right subclavian artery.

The Systemic Circulation.—The arch of the aorta, innominate, and right subclavian arteries were carefully dissected out in situ, and upon opening these vessels an organised and very adherent thrombus was found, occupying the first and second parts of the subclavian. This thrombus commenced about ¾ in. distal to the division of the innominate into the right common carotid and subclavian arteries, and extended along the latter for a distance of 1¼ in. The third part of the subclavian appeared free from thrombosis, but commencing at the origin of the circumflex another large adherent thrombus was found occupying

¾ in. of the axillary artery. Beyond this point no further thrombosis was found either in the brachial or radial arteries of that side. Comparison of the right and left brachial arteries showed narrowing of the lumen of the vessel on the right side. The aorta, innominate and right and left carotid arteries were free from antemortem clot. The thoracic and abdominal viscera exhibited no important pathological changes.

The brain, together with its vessels at the base, was removed carefully, placed in 10 per cent. formalin to harden and then examined. A well-marked embolus was found at the division of the basilar artery into its terminal branches, and microscopical examination showed this to consist of partly digested fibrin with but few leucocytes and practically no recognisable red cells; it was obviously of antemortem origin. To naked-eye examination there seemed little obvious softening in the pons, crura, or occipital lobes, but histological examination of these various areas showed well-marked softening to the extent of extensive necrosis in the upper and mid pons and in the crura. We were unable to demonstrate a similar condition in the occipital lobes.

These findings, taken in conjunction with the clinical picture, suggest that the right clavicle (fractured no doubt during an epileptic fit and unnoticed by the patient) had at the time of the fracture or since, caused damage to the right subclavian artery resulting in thrombosis. The resultant embolus in the basilar artery is then readily explained by the escape of a fragment of the thrombus up the right vertebral artery, and this would seem to be the only explanation.

This case is obviously analogous to the two cases of cervical rib reported by Symonds,[1] although the actual cause was different; and it demonstrates that thrombosis of the subclavian followed by embolism of one of the cerebral arteries is the sequence of events in such cases, and so far as we are aware this had not been actually demonstrated by autopsy before. The thrombus in the subclavian had evidently existed already for several months. The practical point which emerges is that such conditions, though very rare, are liable to lead to cerebral embolism, and this liability emphasises the importance of immediate surgical intervention in those cases where cervical ribs or analogous conditions are showing signs of compressing the subclavian.

EPHEDRINE AND EPHETONIN.

BY F. R. CURTIS, M.B., CH.B., M.SC. LEEDS.

(*From the Department of Physiology, University of London, King's College.*)

EPHEDRINE and ephetonin are now being fairly extensively used in the treatment of asthma, for they produce dilatation of the bronchi in the same way as adrenalin, though their effect lasts much longer than that of the latter. They are optical isomers, having the empirical formula $C_6H_5.CHOH.CH.CH_3.NH.CH_3$. The former is lævo-rotatory, and occurs in Ma Huang (*Ephedra vulgaris*); the latter is optically inactive, and has been synthesised in the laboratories of E. Merck, of Darmstadt, Germany.

Recently it was stated by Kreitmair[1] that ephetonin is as active, weight for weight, as ephedrine, in spite of the fact that ephetonin contains 50 per cent. of dextro-rotatory ephedrine, which is almost devoid of activity. These findings are not consistent with expectations derived from our knowledge of the behaviour of other optically active substances, as, for example, the hyoscyamines and adrenalin. Chen,[2] while admitting a qualitative similarity between ephedrine and synthetic ephedrine (ephetonin), found that in man the latter does not produce nearly so marked an effect on the blood pressure as ephedrine.

The experiments on which Kreitmair based his conclusions regarding the comparative activities of ephedrine and ephetonin are open to criticism. His method was to determine the relative effects on the blood pressure of decapitated cats of small doses of the two substances, the doses employed being 0·05 mg. per kilo.

Now, as Barger and Dale[3] pointed out, in the case of the relatively inactive amines, such small doses are quite unreliable quantitatively. Further, Chen and Meek[4] showed that ephedrine produces a transient tolerance, and I have found it impossible to obtain equal rises of blood pressure even using equal doses of the same substance. Chen regarded any attempt to settle the question by experimental methods as impracticable, but this paper sets forth the results of what may be called a statistical method of approaching the problem.

Cats, with brain and medulla destroyed, were employed as test animals, and the blood pressure was recorded by means of a mercury manometer attached to a cannula in a carotid artery. Advantage was taken of the fact that after small doses of adrenalin there appears to be very rapid recovery of the circulatory system to its previous state. Accordingly, a series of 12 cats was divided into three groups, A, B, and C, of four cats each. Each cat received as a first injection 0·4 c.cm. of a 1/10,000 solution of adrenalin hydrochloride. The animals of group A then received 4 mg. of ephetonin, those in Group B 2 mg. of ephedrine, and those in Group C 2 mg. of ephetonin. After each injection of adrenalin, ephetonin, or ephedrine, the rise of blood pressure was measured in mms. of mercury. It was then possible to obtain a ratio between the effects produced by adrenalin and ephedrine, or ephetonin. The following tables give the results obtained.

Group A.

—	Rise after adrenalin in mm. Hg.	Rise after ephetonin in mm. Hg.	Adrenalin rise. / Ephetonin rise.
Cat 1.. ..	96	86	1·1
Cat 2.. ..	146	132	1·1
Cat 3.. ..	92	64	1·4
Cat 4.. ..	115	132	0·8
Average ..	112	103	1·1

Group B.

—	Rise after adrenalin in mm. Hg.	Rise after ephedrine in mm. Hg.	Adrenalin rise. / Ephedrine rise.
Cat 1.. ..	136	120	1·1
Cat 2.. ..	124	130	0·9
Cat 3.. ..	138	124	1·1
Cat 4.. ..	128	108	1·2
Average..	131	120	1·1

Group C.

—	Rise after adrenalin in mm. Hg.	Rise after ephetonin in mm. Hg.	Adrenalin rise. / Ephetonin rise.
Cat 1.. ..	122	72	1·7
Cat 2.. ..	124	62	2·0
Cat 3.. ..	84	32	2·6
Cat 4.. ..	140	62	2·3
Average..	118	57	2·15

It is hardly necessary to point out that there may normally be quite considerable differences in the pressor responses of the different animals as expressed in mm. of mercury. For that reason adrenalin was used as a sort of index of the intensity of the circulatory reaction as compared with that produced by ephedrine or ephetonin.

From the tables it will be seen that compared with adrenalin, 4 mg. of ephetonin and 2 mg. of ephedrine give an equivalent effect, as would be expected from the fact that 4 mg. of ephetonin contain 2 mg. of ephedrine and 2 mg. of inactive dextro-ephedrine. The result receives further substantiation in the third table, where it is seen that 2 mg. of ephetonin (containing actually only 1 mg. of l-ephedrine) produces half the effect of 2 mg. of ephedrine.

[1] Brain, June, 1927, l., 259.

Summary.

Experimental evidence is submitted to show that ephedrine is approximately twice as active as ephetonin.

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Medical Societies.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Annual General Meeting.

THE eighty-seventh annual meeting of this Association took place on July 11th, 12th, and 13th at the West Riding Mental Hospital, Wakefield, Yorks, under the presidency of Prof. J. SHAW BOLTON.

Foreign psychiatric societies were represented by Dr. E. N. Brush (U.S.A.), Prof. Wimmer (Denmark), and W. Hans Evensen (Norway).

At the business meeting the following were elected honorary members: Dr. C. Hubert Bond, C.B.E., Dr. Eugen Bleuler (Zurich) and the Rt. Hon. Hugh Macmillan, P.C., K.C. The corresponding members elected were: Dr. Malcolm A. Bliss (St. Louis, U.S.A.), Dr. C. O. Ariens Kappers (Amsterdam), Dr. George H. Kirby (New York), Dr. Giacomo Pighini (Reggio, Emelia, Italy), and Prof. August Wimmer, (University of Copenhagen). Prof. C. E. Spearman was appointed the Maudsley lecturer for 1929.

The Gaskell gold medal and prize for 1927 was presented to Dr. Elizabeth Casson and that for 1928 was awarded to Dr. F. R. Martin. It was announced that H.R.H. Princess Mary, Viscountess Lascelles had been pleased to signify her willingness to accept the Association's nursing medal in gold and the certificate in mental nursing (honorary).

Prof. SHAW BOLTON took for the subject of his presidential address

The Evolution of a Mental Hospital: Wakefield, 1818–1928.

He said it was 19 years since the hospital provided a President of the Association, in the person of Dr. Bevan-Lewis. Wakefield could claim to be a mother of asylums, and it had reached a distinction accorded to but few. The first Wakefield Asylum opened in 1818. In 1853 the second was added, which accommodated 150 patients. The third was the modern building. Sir William Ellis who was the first director was afterwards at Hanwell. The President quoted at length from the old regulations, some of which showed much foresight, while others would now be regarded as humorous. The director was the superior officer, and he also acted as apothecary, surgeon, steward, and treasurer. Originally two visiting surgeons and two visiting physicians were appointed, but in 1821, probably on account of the confusion resulting from dual control, the visiting magistrates much increased the powers of the director and diminished those of the physicians. In the minutes of July, 1857, there appears a reference to Dr. Henry Maudsley, who was then on the Wakefield staff, and one of the earliest workers in the Wakefield Laboratory was Sir James Crichton-Browne. The latter not only fostered research in the institution, but he did his best to promote a general medical interest in the work and administration of the hospital. The appointment of resident clinical assistants, unpaid but having free board, lodging, and tuition, dates from early times.

The President proceeded to sketch the various additions to buildings, and the improvements in administration and treatment which were carried out in the progress of the years, discussing at some length the question of punishment of patients for gross misdemeanours. He added that since he took office mechanical restraint and punishment had ceased, both in fact and in name. He declared that if he had the authority he would render restraint of all kinds not only illegal but criminal on the part of any individual who ordered it without having first experienced its effects on his own person. He drew attention to the close association of the mental hospital with the University of Leeds and the advantages accruing therefrom, making particular reference to the establishment of the pioneer diploma in Psychological Medicine.

Sir ROBERT ARMSTRONG-JONES proposed, and Dr. J. BRANDER (Bexley) seconded, a vote of thanks for the address.

On Thursday, July 12th, Dr. M. J. MCGRATH (Wakefield) opened the day's proceedings with a paper on a description of the steps taken in a mental hospital to prevent the spread of dysentery and allied infectious diseases. He said it was essential to have isolation wards for new admissions and infected cases. Infection of inmates occurred not only through infected cases transferred from other places, but from new members of the staff. Hence every fresh patient and each new member of the staff was submitted to a special physical examination for infections. Of 467 probationers 83 had to be rejected as a result of the examination. The organisation of this work had led to good results. It was insisted that an institution entirely free of dysentery was peculiarly liable to infection from without, particularly if a foreign strain were brought in. Investigations led to the conclusion that periodic temporary immunisation of institutions in this respect was constantly taking place.

In connexion with this subject the PRESIDENT read a part of his Presidential address, postponed from the previous day, describing the seriousness of some of the epidemics of dysentery which at various times in the past had afflicted the inmates. The precautions now taken to detect and when found to isolate and treat thoroughly a case of bad diarrhœa or dysentery were given in detail.

Other Communications.

Mr. A. L. HOWDEN (Wakefield) read a paper and demonstrated the bacteriological methods employed at the hospital in regard to the detection of dysentery and allied infectious diseases.

Dr. J. R. LORD (Horton) spoke in praise of the modern skilled laboratory assistant, and said this was the first occasion he recollected on which one had read a paper before the Association. He congratulated Mr. Howden on his paper and demonstration.

Dr. F. A. PICKWORTH (Birmingham) said that at the Birmingham Mental Hospitals, in addition to isolating those who showed a positive Widal, they treated likewise all who had had contact or relation with typhoid patients, or who showed infective organisms in the fæces.

Dr. F. R. P. TAYLOR (Hellingly) said that at Hellingly dysentery cases came among the patients transferred from other hospitals, and it was not until regular bacteriological examinations were made the rule that real good ensued, though isolation had been previously carried out.

Prof. J. W. MCLEOD (Leeds University) expressed his surprise that Shiga infection epidemics did not occur in mental hospitals. He dealt with a number of points in technique.

Dr. C. HUBERT BOND said these communications must have brought home to everyone the necessity of having a laboratory attached to mental hospitals.

Dr. J. I. RUSSELL (York) referred to the different types of dysentery and the difficulties of differentiation.

Dr. LL. WYNN JONES (lecturer in psychology, Leeds University) read a paper on an investigation into the significance of perseveration. He said there were five kinds of perseveration—sensory, motor, ideational, emotional, and conative. He dealt only with the first three.

Prof. B. A. McSwiney (Leeds University) contributed a paper on Physiology in Relation to Psychological Medicine. He said that the paucity of information on cerebral function in the text-books was due to absence of methods available to investigate the normal activity of the higher nerve centres. The explanations advanced often took no account of the function of the lower nervous system in bringing about the requisite coördination and relationship between the different organs of the body. If knowledge of the physiological factors controlling mental activity was to advance, the physiologist must continue to make measurements on structures which he was able to control, and carry out investigations in which he was able to isolate the disturbing factors. He illustrated his thesis by a number of examples, many of which were illuminated by the work of Sherrington and others.

Dr. Ian Suttie (Fife) read a paper on Neurotic Superstructures in Certain Psychoses. The paper consisted of an elaborate justification of the treatment of early cases by psycho-analysis, and illustrated well the degree of concentration and patience required for the successful pursuit of this method.

The President followed with a lantern demonstration of the stages the egg passed through in the germination of the chick, bringing out well the final mechanism which resulted in the emergence of the chick into the outer world.

On Friday, July 13th, Dr. K. C. Paddle (Wakefield) read a paper on Review of Blood Pressure in the Insane. It was based upon the careful examination of 920 male patients, care having been taken not to excite the patient before or at the time of the examination. The cases were divided into seven groups. Summarising his results, Dr. Paddle said that in melancholia 51 per cent. of cases had a subnormal blood pressure; in mania 51 per cent. had a subnormal pressure; in epilepsy 70 per cent. had a subnormal pressure. The average blood pressure in the insane varied according to the age. The majority of insane epileptics had a constantly low pressure independently of the frequency of the fits or the kind of epilepsy.

Dr. F. A. Pickworth (Birmingham) contributed a paper on variation in the agglutinin formation in mental hospital patients and its probable relation to focal sepsis. The main purpose of the communication was a consideration of how the system might be invaded by organisms which demanded a considerable production of antibodies to effect their destruction and removal from the system. The organisms normally present in the jejunum evidently migrated to higher levels, as shown by examination of over 200 cases. The inter-relation between focal sepsis and the variation in agglutinin formation of the insane probably occurred through the medium of a high intestinal sepsis caused by infection with paratyphoid or food-poisoning organisms.

Dr. J. F. Smyth (Wakefield) spoke on the relation of the *Spirochæta pallida* to the histological changes in dementia paralytica. He said that spirochætes were found in 75 per cent. of the cases; they were found most frequently in cases which ran a stormy course. The number of cases examined was 52. The most that could be hoped for under treatment was an arrest of the damaging process to the cortex.

Dr. John Brander (Bexley) discussed general paralysis of the insane as a clinical and pathological entity.

Prof. W. H. Maxwell Telling (Leeds University) spoke of the value of psychical research to the physician. He declared he had received great benefit from a study of psychic phenomena, and proceeded to review the present state of knowledge and the tendency in the profession concerning this subject. His own attitude was sympathetic towards such subjects as telepathy.

The concluding item was a demonstration by the President on cases of sense deprivation and the primary importance of the aural centres in the cortex cerebri.

ANNUAL CONGRESS OF THE ROYAL SANITARY INSTITUTE.

Plymouth, July 16th–21st.

The inaugural meeting on Monday has already been touched upon. During the remainder of the week the work of the Congress was, as usual, divided up among many sections. The following notes deal with some of the points of special medical interest which arose in the course of the meetings.

Hygiene in Industry.

Mr. Ramsay MacDonald, in his presidential address to this Section, compared the worker with a delicate scientific instrument; the old fashion of putting him to do a job just as it came was now abandoned by everyone who had any common sense. Public health had the individual as its aim, but the community as its medium, and included both self-help and mutual aid. The work of bodies such as the National Institute of Industrial Psychology, the Medical Research Council, and the Industrial Fatigue Board, was putting industrial hygiene in its proper place as one of the most vital concerns of our country. We were still in the transition stage and did not wholeheartedly accept the doctrine that the conduct of industry is a national concern. The latest attempts by the General Council of the Trade Union Congress to explore the conditions of industrial peace were an essential contribution to the practical success of recent scientific investigations. In industry strains, fatigues, and worries were as poisonous to life as were disease germs. A close and detailed study of the use to which the human body is put in industry was needed. Mr. MacDonald gave many convincing illustrations from the experience of Dr. C. S. Myers, of unnecessary fatigue and waste of muscular effort in factories, which had been easily remedied with a little study. The temperature and ventilation of workshops affected not only physical condition but the nerves, as shown by temper, general ease, and happiness. It had been found, also, that men varied in their suitability for working with machines running at different speeds; of two men working side by side at similar machines one might be brought to the verge of nervous breakdown by inability to keep up, while the other might complain of boredom from the slowness of the pace. The hygienist was handicapped by the fear of the worker that industrial economy meant intensification of labour for him. The solution of all such problems was of immense importance to industry both as regards its economic working and its internal harmonies, and this department of research was essential for moulding our organisation of industrial and sociological relations into a coöperative concord.

International Preventive Medicine.

Dr. L. Rajchman, Medical Director and Secretary of the League of Nations Health Committee, in his presidential address to the Preventive Medicine Section, outlined the policy and methods which had been evolved by seven years' work on the part of leading men of many countries of all continents. He referred to the services of epidemiological intelligence and public health statistics, of technical publications, and of permanent liaison work with national sanitary administrations; to commissions at work and organisations in progress in many countries; and to investigations of many problems, including those of sleeping sickness in Equatorial Africa, small-pox and encephalitis in Northern Europe, leprosy in South America and the East, malaria throughout the world. Other hopeful enterprises included the practice of preventive methods by health insurance organisations, the adoption of common standards for sera and vaccines, and common lists of causes of death, and the study of preventable causes of infant mortality.

The Present Position of the Tuberculosis Problem.

Dr. F. J. H. Coutts (Ministry of Health), in opening this discussion, pointed out that the conspicuous fall in the mortality-rate from 1851 to 1910 was at the age-period 20–25 years. Since 1910 the greater decline had been at later age-periods, while at age-periods 15–20 and 20–25 there had been little reduction among males and an actual increase in the female mortality. This disquieting feature of the breakdown of young adults from tuberculosis needed elucidation and investigation in each district. Much further investigation was also needed of the supposed immunity acquired by children who suffered from peri-bronchial or other mild forms of tuberculosis. He thought that direct measures had played their part in the decline of tuberculosis and quoted intensive experiments in Sweden and the U.S.A. in confirmation. As regards treatment, good results were being obtained from the induction of artificial pneumothorax and thoracoplasty, and the greatest sphere of usefulness of artificial light treatment was in the treatment of lupus.

Dr. Marcus Paterson said that we taught the infectious consumptive how to avoid infecting his own family and how to lead a healthy life, but we did not educate the public in the fact that the use of a pocket spittoon by the consumptive was a protection for them. Medical students, except in Edinburgh, did not receive adequate instruction in the management and treatment of tuberculosis.

Shell-fish.

The cultivation and marketing of shell-fish in good condition was dealt with from the point of view of the trade, of the Fishmongers Company, and of the medical officer of health. There appeared to be general agreement as to the great value of the bacteriological tests originated by the Fishmongers Company, coupled with inspection of the beds and an intimate knowledge of the topographical conditions.

Mr. James Y. Johnston (Prime Warden of the Company) described the action taken by his Company to organise an influential deputation to the Government, which had resulted in the appointment of special committees, one for investigation of the whole question of pollution of rivers and estuaries, and the other for instituting research as to sewage effluents.

Many medical officers of health spoke of the ready help afforded them by the Fishmongers Company in the case of doubtful shell-fish, and it was pointed out by Prof. J. W. H. Eyre that the Company receives samples for testing from all parts of the country, and that the information in its possession as to samples and beds is freely available both for the trade and for medical officers of health.

Housing.

The discussion on housing was opened by Councillor Albert Webb, chairman of the Plymouth Housing Committee, who dealt chiefly with methods of house-purchase, the renovation of existing privately owned houses, and the clearance of congested areas. He firmly believed in occupier-owners and, during the last three years, the Corporation had advanced £450,000 to enable tenants of limited means to become owners. The Corporation borrowed at 4¾ per cent., and lent at 5¼ per cent., and the ½ per cent. paid management expenses, so that this scheme was self-supporting.

The Corporation had also provided for the sale of municipal houses to existing tenants on easy terms. The only initial outlay for the tenant was a deposit of £10 and the cost of transfer and mortgage deed. For example, a "non-parlour" house, rented at 8*s.* 9*d.* per week, could be purchased by the payment of 9*s.* 6*d.* per week for 30 years.

The Corporation had renovated 147 properties under Section 3 of the 1925 Act, at a cost to the owners of £25,000, to be recovered from them in repayments spread over ten years. Most of this work was done by agreement with the owners. They had a new scheme, which was provisionally approved by the Ministry of Health, for reconditioning certain houses in a congested area and demolishing the remainder. Such a scheme might to some extent cater for the casual worker. An experiment in providing small houses for special cases was being considered.

Several speakers congratulated Councillor Webb on the housing activities of Plymouth. From all quarters came the admission that up to now nothing had been possible in the provision of houses for the poorest class and the low-paid worker with a large family.

Dr. C. Lander (Devonport) thought they should recognise that economic rents were frankly impossible, and that housing should be regarded as a State social service. There must be a subsidy and it should come from the National Exchequer. A valuable contribution came from Miss J. M. Upcott, housing manager to the Chesterfield Town Council, on the management of municipal housing estates on "Octavia Hill" lines. She advocated a gradual preparation and education of slum tenants for their removal to better quarters, with perhaps a transition period spent in reconditioned houses.

Milk.

Dr. W. G. Savage opened this discussion with a paper on Milk and Tuberculosis. He regarded the grading of milk as a "magnificent educational gesture." The Tuberculosis Order, as at present worked, was of no value whatever. It would be a continuing expense, with no reduction of bovine tuberculosis and no protection to the public from tuberculous milk. Before the country was committed to the expense of routine veterinary inspection of milk herds, they should be quite clear in their minds as to what they expected this inspection to accomplish and draw up a carefully thought-out scheme, including the coöperation of the dairy farmers.

In the discussion the case for dried milk was put by Mr. F. O. Morris, the case for pasteurisation by Dr. S. G. Moore, and there was a general admission that the eradication of tubercle was so remote that some method of rendering raw milk safe must be adopted in the meantime.

Immunity Methods in Scarlet Fever and Measles.

Dr. R. A. O'Brien showed that the Dick test, the Schultz-Charlton test, active immunisation, and the use of antitoxin have been firmly established in the case of scarlet fever. There was still lacking an antiserum to combat septic conditions which had already appeared, and the problem of the convalescent carrier or return case was unsolved. Convalescents were discharged with hæmolytic streptococci in their throats indistinguishable by any available test from scarlet fever streptococci, but it was not as yet practicable to ask for negative cultures before release, and the medical officer could only adhere to the rule of sending out cases after the restoration of normal health with an absence of discharges from mucous membranes. As regards measles, the utility of the serum of convalescents for conferring either temporary complete protection or for giving active lasting immunity, according to the date after exposure to infection on which the dose was given, was now accepted. The problem for sanitary authorities was to provide and maintain a supply of this serum and to make appeals for volunteer donors.

Dr. W. A. Lethem (Ministry of Health) pointed out that though last year measles killed five times as many children as scarlet fever, the public was still not convinced of its dangers. Schemes for the supply of the serum of convalescents were in operation in several towns in France, Germany, and the U.S.A. Dr. Lethem outlined a scheme for districts in this country. The serum was effective from the eighth to the fourteenth day after the temperature fell. It was preferable to obtain it from adults who could easily spare enough to immunise some 30 children. Adults were usually treated at home by general

practitioners. The medical officer of health should hold a meeting with practitioners to explain the scheme and seek their coöperation in obtaining donors. He should select a laboratory and arrange for an expert from the laboratory to collect the blood. The serum remained potent for many months, if kept at a low temperature. He thought donors would be readily obtained when they understood the great benefit they were conferring on the community without harm to themselves. If the supply was limited, its use should be restricted to children for whom an attack of measles might be a matter of extreme gravity: if more ample, it might be used for all very young children who had been exposed to infection.

Dr. W. T. Benson (Edinburgh), Dr. J. Parlane Kinloch (Aberdeen), and Dr. E. H. R. Harries (Birmingham) confirmed from their experience the views expressed by Dr. O'Brien and Dr. Lethem.

Nursery Schools.

Miss Margaret McMillan described, with the aid of lantern slides, the wonderful changes effected in the pre-school children from the congested areas of Deptford and Greenwich by attendance at the Rachel McMillan open-air garden school. She explained the methods adopted and claimed that by economical management and simple buildings the cost is less than that of an ordinary infant school. The parents contribute, but in return the children get three good meals a day. Nursery schools may be a confession of failure—of failure under existing conditions to secure a good home for each child with reasonable access to playground or garden—but the practical sanitarian acknowledges that congested areas in our industrial towns will hardly be removed in one generation and that there is, in the meantime, a clamant need for many more "Rachel McMillan" schools run by enthusiasts like Margaret McMillan. It is not surprising, therefore, that the resolution, in favour of more open-air nursery schools, and calling upon local authorities to make the nursery classes in the Fisher Act of 1918 operative without delay, met with general acceptance by the Section. Prof. Winifred Cullis, in seconding, emphasised the fact that during these years the foundations of health, character, and education were laid, and that children who had been under the supervision of welfare centres showed fewer defects when they reached the school-entrance age.—Dr. Mabel G. Brodie also testified to the value of such nursery schools: and Dr. E. G. Annis (M.O.H., Greenwich) confessed that Miss McMillan's work for the children of his borough had converted him from a sceptic into a firm believer. The open-air régime and care taken quite prevented outbreaks of infectious disease in the school.

Light Treatment.

Dr. Albert Eidinow described the biological actions of light, while Dr. H. Stanley Banks (Leicester) and Dr. W. Allen Daley (Hull) dealt with the practical application of light treatment to public health work.

Dr. F. G. Bushnell (Devon) spoke on uses and abuses of light treatment, and all the three last-mentioned speakers sounded a note of warning as to exaggerated statements and commercial exploitation of this treatment.

Dr. Daley pointed out, from his experience, the danger of this treatment being added to the list of so-called medical baths and employed without proper medical supervision. He summed up by expressing the opinion that light treatment was a permanent addition to the disease-preventing and disease-curing methods which should be provided by a local authority, particularly for the sun-starved denizens of our towns, that the use of irradiated foodstuffs was not a substitute for light clinics; and that the provision of light treatment by baths committees should be watched with great care.—A resolution was adopted recommending the establishment of public sun and air bathing facilities by local authorities especially for children.

Health of Seamen.

Fleet-Surgeon W. E. Home said that during this year, for the first time, fairly accurate statistics of the mortality of seamen, occupied and retired, had been published by the Registrar-General. Their mortality from disease was 75 per cent., and from injury five times greater than those of "all males." The cubic space of British seamen had been increased from 72 cub. ft. to 120 cub. ft., while that of the lascars had remained at 72 cub. ft. Coincidently, the phthisis death-rate of British seamen had declined by 40 per cent., and that of the lascars only by 15 per cent. The seaman lived in his ship for 24 hours in the day, and his living accommodation should be passed by a health authority. Some of the seaman's needs were: care of water-supply, washplaces, good galleys, good w.c.'s, drying-rooms, and accommodation aft.—At a conference of port sanitary authorities, held on Thursday, July 19th, the following resolution was unanimously adopted:—

> That the Council of the Institute be recommended to direct the attention of the Government to the desirability of the care of the health of the men of the Merchant Service being placed in the charge of the Ministry of Health.

The motion was proposed by Fleet-Surgeon Home, and seconded by Alderman F. Askew, chairman, Hull and Goole Port Sanitary Authority, who together sent the motion up to the Council of the Institute, to get it on the agenda of the Conference. The motion was supported by Commissioner H. Miller, of the St. John's Ambulance Brigade, in an excellent speech, and its unanimous acceptance was ensured from the first.

National Health Insurance Service.

On the last day of the Conference Mr. Henry Lesser, in a presidential address, showed how financial considerations were retarding the proper development of the Service, and Mr. W. Gill Hodgson, clerk to the Liverpool Insurance Committee, expressed the opinion that the present scheme should be perfected by the addition of specialist and consultant services with laboratory aids and of dental treatment before any further classes of persons, such as dependants of insured persons, were brought in.

DONATIONS AND BEQUESTS.—Sir Henry Samman, Bart., of the Manor House, Willerby, Yorks, shipowner, left £23,000 for charity, including £10,000 to the Hull Infirmary, £5000 each to the Seamen's Mission, Hull, and the Henry Samman Chamber of Commerce Endowment, Hull, £1000 each to the Port of Hull Society Sailors' Orphan Homes, and to Hull Seamen's and General Orphanage, and £500 to Victoria Hospital for Children, Hull.—The Right Hon. Satyendra Prasanna, Baron Sinha of Raipur, of Delhi, India, and of London, left Rs.10,000 each to the hospital attached to the Belgatchia Medical College, the trustees of the Sadharan Brahmo Samaj of Cornwallis-street, Calcutta, the trustees of the Bhowanipur Sanmilani Brahmo Samaj, the Sambhunath Hospital, Bhowanipur, and the Calcutta Orphanage of Bulloram, Deys-street, Calcutta. And if he had not already made provision (as he had intended to do in his lifetime) for the maintenance of the Middle English School and Charitable Dispensary which he had built and for many years maintained at Raipur, then Rs.50,000 upon trust for investment and the income applied for such purpose.—Mrs. Emily Crossley, of Highgate, left £2000 to the Ancoats Hospital, Manchester, as to £1500 for the general maintenance of that hospital and £500 towards the general maintenance of the Convalescent Hospital at Warford, Cheshire, in connexion with the Ancoats Hospital.—Mr. Samuel Palmer Cooper, of Moseley, Birmingham, left £1000 each to the General Hospital, Birmingham, Queen's Hospital, Birmingham, the Birmingham and Midland Free Hospital for Sick Children, and to Dr. Barnardo's Homes: £500 each to the Birmingham and Midland Eye Hospital, the Birmingham and Midland Homœopathic Hospital, the Birmingham Royal Institute for the Blind, the National Institution for the Blind, and the Children's Hospital, at Cold Ash, Newbury, if his niece, Mary Katherine Cooper, is matron there. After other bequests the ultimate residue of the property is left between the General Hospital, Birmingham, Queen's Hospital, Birmingham, the Birmingham and Midland Free Hospital for Children, and Dr. Barnardo's Homes.

Reviews and Notices of Books.

Biological Introduction to the Study of Neurology and Psychopathology.

Introduction biologique à l'étude de la neurologie et de la psychopathologie. By C. V. Monakow and R. Mourgue. Paris: Felix Alcan. 1928. Pp. 416. Fr.80.

Those who endeavour to keep in touch with the philosophical background of biology are aware of the existence of a reaction against the confident mechanist and materialist theories of the last century. In the English-speaking world Prof. Whitehead, Prof. Lloyd Morgan, and General Smuts are among those now seeking to construct new biological concepts which shall be more adequate to explain the behaviour of living organisms. No biological hypothesis which aims at transcending pure mechanism can fail to be indebted to Bergson, who 30 years ago was a voice crying in a wilderness of determinism. Prof. von Monakow and Dr. Mourgue freely acknowledge this debt in the pages where they impugn current concepts in neurology and psychiatry on grounds which Bergson has rendered familiar. They state that pathological phenomena are considered in isolation from the organism; also that the existing conception of function is too static and ignores the time factor. They believe that evolution is not sufficiently recognised to be a qualitative as well as a quantitative change, and that language itself, owing to its mode of development, is unsuited to deal with the essential mobility of function. Owing to these disabilities modern neurology tends to see in pathological states of the nervous system no element save functional deficit, and does not take into account the compensatory efforts, evoked by injury from the organism, which distinguish living creatures from machines. To overcome these defects of method the authors find necessary new concepts which require new terms for their designation, and thus they introduce us to "klisis" and "ekklisis," "protodiakrisis," and "diaspasis," "hormétères" and "noohormétères," "syneidesis" and "hormè." The most important of these conceptions appear to be the two last named. "Syneidesis" is described as "conscience biologique" and is a principle of auto-regulation invoked to explain the efforts of an organism to compensate for its defects. "Hormè" is the undifferentiated drive from which instincts derive their impulsion and recalls Bergson's "élan vital."

Armed with these new weapons of thought Prof. von Monakow and Dr. Mourgue range over the whole realm of neural function from embryology to religion, and from the conception of causality to the permeability of the choroid plexuses. After an introductory chapter they trace the development of character in terms of the integration of instincts. The evolution of movement, orientation, and language is then considered. The authors next deal at length with disintegration of neural function, giving special consideration to aphasia, and severely criticising the theories of an anatomical localisation of speech "centres." Next come chapters devoted to the psychoneuroses and the psychoses, schizophrenia being taken as an example of the latter. The book concludes with a review of the evidence that abnormal permeability of the choroid plexuses plays a part in the ætiology of disease of the nervous system.

Criticism of this book is inevitably disarmed by the width of its scope, the laudability of its aim, and the ingenuousness of its title. The names of the authors are a sufficient guarantee that the theories developed are firmly based upon an expert knowledge of the histology of the nervous system and a wide clinical experience. That such authorities should be profoundly discontented with current physiopathological ideas is of considerable moment, and their attempt to provide a more truly biological basis for neurology and psychiatry cannot fail to be challenging and stimulating. How far they have succeeded in their object must be left to the decision of the individual reader. Those who are satisfied with a mechanistic physiology are unlikely to be led to alter their minds. Those who regard such concepts as inadequate to represent the living reality may perhaps find an effective substitute in "syneidesis" and its confrères. But many to whom such principles are incomprehensible will probably finish the book a little disheartened. Is it possible that owing to the structure of our minds and language we are of necessity condemned to employ scientific methods which can never tell us the whole truth about reality? Or may we hope with Prof. von Monakow and Dr. Mourgue that in time we shall succeed in forging new instruments of thought with which to enlarge our apprehension?

Anthelmintics and their Uses in Medical and Veterinary Practice.

By R. N. Chopra, M.A., M.D. Cantab., Major I.M.S.; and Asa C. Chandler, M.Sc., Ph.D. London: Baillière, Tindall and Cox. 1928. With 5 plates and 65 figures in the text. Pp. xii.+291. 22*s*. 6*d*.

This book is written to display for medical and veterinary practitioners both recent and time-honoured methods of attacking helminths. The prime consideration in anthelmintic treatment, it is insisted, must be the patient's safety. The value or otherwise of diet and purgatives, the method of administration of the latter, and the criteria of cure are discussed. A chapter on helminthological considerations bears evidence of haste in preparation. The key which it contains, and which purports to deal, among other matters, with the commoner and more important adult nematodes parasitising man, is in many ways unsatisfactory. No mention is made of ascaris, trichuris, male threadworms, and the hookworms; the description of hydatid cysts seems to imply the necessary presence of scolices, and in the figures of ripe segments of *Tænia solium* and *T. saginata*, described as being drawn to scale, the scales are not correct. The statement that microfilariæ are injected by mosquitoes will not find general acceptance. Several proper names are confusingly misspelt. The chapter on correlation between the chemical composition and anthelmintic efficiency of drugs is a valuable one; full acknowledgement is made of the work of Caius and Mhaskar.

The use of various anthelmintics are considered in detail and this part of the book will be useful for purposes of reference. Most readers will turn to those drugs which are popular at the moment. It is suggested that carbon tetrachloride produces on the mucosa an anæsthetic protective action which limits absorption after doses of moderate size. The implication appears to be that small or divided doses must prove more dangerous than single doses of 3 to 4 c.cm. Evidence for this conclusion would be welcome. Commenting on the widely accepted explanation that poisoning attributed to this drug is really due to traces of carbon disulphide, the authors point out that this lacks laboratory evidence and that the dose of the carbon disulphide for a foal is 1 to 2 drachms. At the same time they accept the assumption that it is some sulphur compound which makes the drug toxic. The reservations which they advise in the administration of carbon tetrachloride entail a close personal examination of every patient. It is once more stated here that Schüffner and Vervoort advised oil of chenopodium in dosage of 3 c.cm.; reducing drops on the international dropper to cubic measurement, their dosage was really 1·2 c.cm. After noting that Ashford treated two million cases with thymol without a single fatality, the authors state that chenopodium and carbon tetrachloride are less dangerous than thymol for field work (though the records of neither approach in safety this cited example) and have largely supplanted thymol in the hands of most practitioners who have kept abreast of the times. We deprecate the implication that the

many authorities who favour treatment by thymol are old-fashioned. The chapters on antimony and emetine used mainly in schistosomiasis, are valuable.

The book as a whole is uneven, but since it reflects the views of men who have had considerable experience in the use of anthelmintics it will be studied with interest by those practising in the tropics.

SHORT ESSAYS ON MEDICAL TOPICS.

By C. O. HAWTHORNE, M.D. London: John Bale, Sons and Danielsson, Ltd. 1928. Pp. 246. 4*s*. 6*d*.

THIS little book contains some 50 essays, from which it will be gathered that many of them are not longer than the average leading article. Hence, as the subjects dealt with vary extremely, not only in theme but in importance, there are places in which the author is driven to being arbitrary, for he has allowed himself so little space in which to explain his views and no space at all for argument with those who might differ from him. But we do not think that many will want to differ, for the author, in discussing some of the most important professional topics, has dealt with them fairly, brought out the salient points, and delivered well-balanced judgments.

SECTION-CUTTING.

An Introduction to the Technique of Section-Cutting. Edited by FRANCES M. BALLANTYNE, M.A., Assistant in the Zoology Department, University of Glasgow. Edinburgh: E. and S. Livingstone. 1928. Pp. 80. 3*s*.

THIS little book has been compiled from the notes of the late Mr. Peter Jamieson, for many years assistant in the department of zoology in the University of Glasgow. It sets forth clearly and briefly the basal technique of section-cutting, and will no doubt find a place in the junior student's library. It is, however, quite elementary, and while, within its limits, its teaching is admirable, it contains little more than the student can learn from an hour's personal instruction and a little practice. If a medical student decides to be content with this manual in place of a more ambitious work he should disregard the statement on p. 49 that formalin as a fixative is only satisfactory for such objects as the eggs of frogs and newts.

KALA-AZAR.

A Handbook for Students and Practitioners. Second edition. By L. EVERARD NAPIER, M.R.C.S., L.R.C.P. Lond., in charge of Kala-Azar Research, Calcutta School of Tropical Medicine. London: Humphrey Milford, Oxford University Press. 1927. Pp. 203.

To those who practise in England kala-azar is merely of academic interest; but to the student of tropical medicine this disease is of paramount importance, for it is one of the dramatic infections of the tropics of which our knowledge has made rapid strides during recent years. Only some 16 years ago kala-azar was regarded as inevitably fatal; and now we learn it is possible to predict a cure in over 90 per cent. of cases. The second edition of Napier's Kala-Azar is thus opportune. Into its 200 pages a vast amount of information is compressed. Especially valuable is the account of the minute epidemiological investigations which led up to the modern conception of the transmission of the disease by *Phlebotomus argentipes*. These demonstrate clearly what can be accomplished by systematically applied observations in a limited area such as the town of Calcutta. The tropical practitioner will welcome a reasoned account of the treatment of kala-azar by the newer pentavalent compounds of antimony; he will, moreover, appreciate the numerous clear illustrations and graphs and the exhaustive bibliography.

ANAEROBES.

Données récentes sur les microbes anaérobies et leur rôle en pathologie. By W. WEINBERG and B. GINSBOURG. Paris: Masson et Cie. 1927. Pp. 291. Fr.35.

Weinberg and his colleague have performed a great service to bacteriologists in publishing this review of the work on anaerobes published between 1918 and 1926. The review is accurate, comprehensive, and is informed throughout with the authors' profound knowledge of the subject. The bibliography contains some 1400 references. If there is a fault it is that certain organisms are included which may fail to stand the test of further investigation; but this is better than omitting any which subsequently prove to be of importance. Bacteriologists will be grateful to the authors for such an excellent work of reference.

JOURNALS.

THE CRIPPLES' JOURNAL. Vol. V. No. 17. July, 1928. 1*s*. 6*d*.—The publication of the April number of this journal closed four years of work, and the present issue inaugurates the passing of the journal from being the official organ of the Central Council for the Care of Cripples into an independent publication run by its own advisory council and with definitely international aspirations. This advisory council, presided over by Sir Robert Jones, will be composed as follows: Dame Georgina Buller, Dame Agnes Hunt, Mrs. Townsend, Sir William Wheeler, Sir John Lynn Thomas, Rev. Ratcliffe Barnett, Sir William Lawrence, Bart., and Mr. A. H. Wood (Great Britain), Mr. Edgar Allen and Dr. Robert Osgood (America), Dr. Calvé (France), Dr. Murk Janssen (Holland), Prof. Putti (Italy), Dr. Rummelhoff (Norway), and Dr. Biesalski (Germany). The policy of the journal will be towards promoting unity of effort in bodies already dealing with one field of social work or another in connexion with the interests of cripples, and it is intended to provide information regarding all work in other countries bearing on this policy, and to print articles with the special object of instructing voluntary workers in clinical and training centres. Much stress will be laid upon the publishing of articles of an educational nature while, if the financial future of the journal allows, the price will remain at its present modest figure. We wish our contemporary all prosperity in its ambitious departure.

New Inventions.

PROBE-POINTED SCISSORS

FOR USE IN REMOVAL OF SALIVARY CALCULI.

IN removing calculi impacted in Wharton's duct, I have found the probe-pointed scissors here illustrated extremely useful. The probe is introduced into the duct as far as the stone, the scissors then lay open the duct, when the stone is usually extracted without difficulty.

The instrument has been made for me by the Genito-Urinary Manufacturing Co., 28A, Devonshire-street, W.1.

Birmingham. HAMILTON BAILEY, F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, AUGUST 4, 1928.

EPIDEMIC CONSTITUTION.

FREIHERR VON PIRQUET'S discovery of the skin reaction to tuberculin not only enabled us to realise the universality of tuberculous infection, but has also proved to be the forerunner of a series of investigations of a similar character which have brought within the compass of one scientific theory most of the epidemiological phenomena exhibited by a large group of the acute communicable diseases. The Schick and Dick tests, although the significance of a positive result is different from that in Pirquet's reaction, have been equally fruitful in the genesis of ideas as to the prevalence of the infections of scarlatina and diphtheria, and these ideas have been found applicable to the epidemiological problems of other droplet-borne infections, such as poliomyelitis, meningococcal meningitis, and epidemic encephalitis. Prof. ULRICH FRIEDEMANN'S paper, published on page 211 of our present issue, is an admirable survey of the present state of knowledge in relation to the ætiology of some of these diseases and the extent of latent infection with the virus, whether known or still undetected, of some of these diseases among civilised communities. The essential truth now established is the extent to which the population is constantly immunised, presumably by subminimal doses of the virus, against diphtheria and scarlet fever, a process which Prof. FRIEDEMANN terms "latent epidemisation." The meaning of this phrase has been tersely explained by W. L. AYCOCK[1] in these words, "Of susceptible individuals exposed to measles 1 out of 1 develops the disease; to diphtheria 1 out of 10 develops the disease and 9 out of 10 develop subclinical immunity; to poliomyelitis 1 out of 100 develops the disease and 99 out of 100 develop subclinical immunity, or immunity from abortive attacks." Students of epidemiology will subscribe generally to this view without committing themselves to acceptance of the numerical proportions, and there can be no doubt that the way to this state of agreement has been paved by the American workers on the dermal reaction to diphtheritic and scarlatinal toxins. At the same time, it is only right to remember that ideas of this nature, nebulous perhaps, like many ideas born of clinical observation, found expression long before they were capable of experimental verification, in explanation, for instance, of such facts as the observed immunity of fever hospital residents and nurses without the affliction of previous manifest disease, a peculiarity in relation to scarlet fever and diphtheria contrasting markedly with the behaviour of unvaccinated members of the staff in contact with small-pox. Indeed, it may be said that clinical observations, field inquiries, and statistical surveys had already made the minds of epidemiologists receptive to the idea of "latent epidemisation" and "latent immunisation," although the theory had not actually been given its present acceptance and wide application.

Since FARR made a science of vital statistics English epidemiologists have continued to search for the laws of epidemics, and many of the proceedings of the Epidemiological Society, which is now merged in the Royal Society of Medicine, will repay study to-day. The periodicity of the different zymotics, their incubation periods, age-incidence, and variable case-mortality in relation to the apparent source of infection, the course and peculiarity of single epidemics, the predictability of their behaviour, were all explored for the clue which would lead to the discovery of one thing common to them all, the law which governed their coming and going. FARR brought the art of epidemic prophecy to a high state of accuracy, and satisfied himself by purely mathematical reasoning that there was more behind the decline of an epidemic than mere exhaustion of the number of susceptibles existing at its onset. In more recent years attempts have been made to account for the decline and recurrence of epidemics by variation of the infectivity of the virus, a theory not inherently improbable since changes in virulence are well recognised. Perhaps the most ingenious mathematical attempt to correlate the seasonal and other variations of the incidence of epidemic disease was the application of the periodogram to this type of problem by BROWNLEE.

Working alongside the statisticians—sometimes combining more than one function in a single person—were the bacteriologists and the practical sanitarians, both piling up observations which undermined the old conception of the epidemic without supplying enough material to provide entirely new foundations. The bacteriologist established the existence of chronic or intermittent carriers of infection; the practical investigator of epidemics was more impressed with the importance of mild, anomalous cases of disease. But it was really the field observations of J. A. GLOVER and S. F. DUDLEY, followed by the laboratory study of epidemics in mice by W. W. C. TOPLEY, which established the paramount importance of the population-medium—its constitution, its spacing, its internal movement, and the influx of new members—as controlling factors in the rise and fall of epidemics. Flagrant disease, anomalous disease, infection without disease, intermittent and chronic carrier states are now seen in their true importance and interrelation with one another, and the reactions of Schick and Dick are measures of their combined influence. Many things still remain to be explained, notably the tendency for diseases practically to disappear and then revive with apparent irregularity and with impressive suddenness, like influenza and poliomyelitis, in the absence of abnormal migration, or to occur apparently de novo as in the case of epidemic encephalitis. But we have a solid addition to the body of medical thought in this new theory of the epidemic, which justifies the best part of the established measures for control of the communicable diseases, while revealing the reasons why these in themselves have proved insufficient to abolish the endemic zymotics from civilised communities. The criteria of communicability, too, have been extended, and we can no longer assume that diseases like rheumatism are non-communicable merely because case-to-case associations are untraceable. Further, we have been armed with a new specific preventive in the form of toxin or toxin-antitoxin inoculation, the value and limitations of which are well stated in Prof. FRIEDEMANN'S paper.

[1] Amer. Jour. of Hygiene, January, 1928, p. 35.

THE VACCINATION REPORT.

EARLY this week appeared the Report of the Committee on Vaccination appointed two and a half years ago by the Minister of Health in conjunction with the Medical Research Council. It was a Committee of seven with Sir Humphry Rolleston as chairman,

Dr. J. R. Hutchinson as secretary, and Dr. F. R. Blaxall, Dr. G. F. Buchan, Dr. A. E. Cope, Dr. Mervyn Gordon, Prof. J. C. G. Ledingham, and Dr. J. R. Perdrau as members. The Committee was asked to inquire and report: (1) on matters relating to the preparation, testing, and standardisation of vaccine lymph; (2) on the practical methods which are available in the light of modern knowledge to diminish or remove any risks which may result from vaccination; and (3) on the methods of vaccination which are most appropriate to give protection against risk of small-pox infection in epidemic and non-epidemic periods. The Committee was at the same time given liberty to coördinate the work of investigation on these questions in this country and abroad. The Report is divided into two parts, of which the first deals with each reference in turn, and the second exclusively with the consideration of the nervous conditions which occasionally follow vaccination. A series of appendices complete a volume[1] of 324 pages, which is admirable alike in its lucidity and restraint.

The Committee's reference has given rise to an account of the methods of lymph production in general and especially those employed by the Government Lymph Establishment. The preparation of the vaccine is of peculiar interest, for, with the exception of the original Pasteur method of treatment of hydrophobia, small-pox vaccination is to-day the sole established instance of the use of a living virus as an immunising agent. Although strains of vaccine lymph of diverse origin are used, the vaccination process throughout the world is remarkably constant in character and uniform in feature, and agreement has been reached as to the methods of testing the potency of lymph and as to the minimum standard of potency which can be sanctioned. These tests and standards are now laid down in the Regulations under the Therapeutic Substances Act, and they give, in the Committee's opinion, the desired assurance that the preparation of vaccine lymph is being carried out on approved lines as regards minimal potency and comparative absence of associated micro-organisms. Government lymph, it is interesting to note, is not issued until about two years from the date of its collection, when, owing to the combined action of the glycerine and oil of cloves the extraneous organisms it contains are eliminated or reduced to 5 or less per mg. There is still, unfortunately, a great lack of information as to the minimal dose of lymph necessary to secure adequate immunity from small-pox, and this is a problem awaiting solution by experimental means. Singular promise lies in an observation recently made at the Lister Institute, where vaccine virus, in contact with chick embryo cells, has been found to increase in potency one-thousand fold. Otherwise there is a general consensus that different strains have similar immunising powers. Vaccination in this country has hitherto aimed at securing in infancy the longest possible duration of immunity and at postponing the time when revaccination should become necessary, whereas the American and Canadian practice is to popularise vaccination by rendering it as little incommoding as possible, with the hope that a second or even a third vaccination will not merely be tolerated, but even sought. The Committee now definitely recommends that, in place of the officially advocated four insertions, a trial should be made of vaccination and revaccination in one insertion with a minimum of trauma, and deprecates multiple scarification or cross-hatching. The optional age for vaccination on these lines is regarded as 2–6 months, and the offer of revaccination might with advantage be made when the child enters school at 5–7 years, and again on leaving it at 14–16 years. Multiple insertion would still be available for such persons as desire to obtain the maximum protection at one stage. Vaccinators are advised to inspect twice after vaccination, the second time between the fourteenth and seventeenth days, and to make it clear to parents that such medical attention as is required is obtainable without cost. The syllabus of instruction to medical students should, the Committee feels, be revised in the light of present-day knowledge.

The risks of vaccination have markedly diminished since the Act of 1898 came into force, and in so far as the risk is from sepsis it is likely to diminish further to a vanishing point. But the second part of the Report is, as we have said, given up entirely to the risk from disease of the central nervous system following vaccination, and there might appear to be a certain want of proportion in devoting more than 100 pages to this subject, were it not for the fact that the occurrence of post-vaccinal nervous disease, however seldom of occurrence, cannot fail to have a bad effect on vaccination both in its administrative and in its medical aspects. Happily the Committee is able to point out the extreme rarity of such manifestations. During a period of five years (1922–27), in which 3 million charges of lymph were issued by the Government station, and the estimated number of vaccinations performed in this country was over 4½ million, 51 deaths were recorded from this cause. Particularly rare is nervous complication after revaccination and after primary vaccination in early infancy, and on this ground, if on no other, early infancy remains the time of choice for primary vaccination. Here is incorporated, at length, the report of the committee appointed in 1923, under the chairmanship of Sir Frederick Andrewes, which now sees the light in this country for the first time. Although the non-appearance of the Andrewes Report may have occasioned undue anxiety in some quarters, justification of the delay lies in the reassuring commentary which now appears in the light of further knowledge. The Rolleston Committee unanimously acquits vaccinia virus of being the sole cause of nervous sequelæ, although it cannot exonerate vaccination from playing some part in their causation. It is its considered opinion that the coöperation of vaccinia with the viruses of poliomyelitis or of encephalitis lethargica, or possibly some unknown neurotropic virus harboured by a vaccinee, must for the present be retained as a working hypothesis of causation. It is hoped that the publicity now given to this complication will result in an accumulation of clinical and epidemiological data which may help along with experimental research to solve a problem of great importance in quality if not in quantity.

The final recommendation is to the effect that steps be taken to impress upon the public mind the nature and purpose of vaccination. The Committee's Report will afford the medical profession for the first time a body of accurate and unbiased information to be used for this purpose, and we believe with good prospect of success.

[1] Ministry of Health. Report of the Committee on Vaccination. Cmd. 3148. H.M. Stationery Office. 1928. 7s.

ANTHROPOLOGY AND PARASITES.

THE nasty grey squirrel which came from North America and escaped from the Zoo some years since to spread all over England, as far north as Yorkshire,

and at least to the Cotswolds in the west, carries with it everywhere its own special flea; anyone knowledgeable in such matters (whether he should be called a pulicophile or a siphonapterologist we do not know) who picked up a dead *Ceratophyllus wickhami* in the road would be sure that *Sciurus cinereus* was not far off. And this is the general truth about parasites; each species is adscript to one or at most two or three hosts, and very few are so little particular in their habitats that they range indifferently over a large number. When the hosts travel they take their parasites with them. It is very unlikely, for instance, that the great plague vector *Xenopsylla cheopis* is autocthonous in England; it lives, or used to live, on the rats in the Borough because it had come with its host from the tropics. Similarly, the provenance of the labourers on the coffee plantations in Brazil can be predicted by finding out whether their predominant hookworm is *Ankylostoma duodenale* or *Necator americanus*. This segregation and isolation of parasites in particular hosts naturally encourages speciation—i.e., separation into distinguishable forms—and their occurrence may give us some information both as to where the host has been quite lately and as to where and what the hosts' ancestors have been in the remote past. The specific differentiation of human lice as they occur now is dubious and uncertain; it is supposed that they are largely mixed hybrids of some definite species which used to occur isolated on the primary human races, and which have become mixed by human migrations and intercourse.

In one way and another, therefore, parasites may throw light on a good many general questions, and in the last number of the *Quarterly Review of Biology* (vol. iii., p. 225) the possible evolutionary significance of the protozoan parasites of monkeys and man is discussed in an interesting way by Prof. ROBERT HEGNER, of the Johns Hopkins School of Hygiene. He recognises six amœbæ, seven flagellates, one coccidium, and one ciliate as being genuinely parasitic in the human intestine, of which *Entamœba histolytica*, *Isospora hominis*, and *Balantidium coli* are definitely pathogenic; in the blood we have three malarial parasites, three trypanosomes, and three *Leishmania*. The protozoa of monkeys are naturally not nearly so well known, and it is obvious that observations on animals living in captivity in close association with man are not of much significance. The monkey amœba *E. nuttali* is as like the human *histolytica* as it can be, nor can their harmless *E. coli* be distinguished from those found in man. And with the exception of the *Leishmania* the same correspondence is found in the other groups; 11 out of 15 of the human genera, and two-thirds of the human species have been described from monkeys, though the malarial parasites of monkeys would be better described as very similar to, rather than identical with, that of man. The facts are interesting; their interpretation is difficult, for such a situation may have arisen because man has a genetic relationship with monkeys or because he provides in his bowels, his blood, and his economy in general, a similar series of habitats. On either hypothesis human parasites would be more like those of monkeys than those of rats or cows, and there seems to be nothing in the argument which would convince a determined fundamentalist of error. On the whole, the genetic relationships of hosts and parasites are not very close, and if the occurrence of monkey parasites in man indicates the line of human descent, what significance are we to attach to the discovery of *Balantidium coli* in pigs and guinea-pigs or to the fact that the other natural host of *Pulex irritans* is the badger?

Annotations.

"Ne quid nimis."

THE BUNDABERG REPORT: FATAL STAPHYLOCOCCAL INFECTION.

THE report of the Royal Commission on the Queensland serum tragedy of last January [1] has now been tabled in the Federal Parliament. The findings of the Commission are these:—

The Findings.—1. The injections of toxin-antitoxin mixture administered by Dr. Thomson at Bundaberg on Jan. 27th, 1928, were responsible for the deaths of 12 out of 21 children inoculated, and for the illness of several who survived.

2. The toxin-antitoxin mixture as issued by the Commonwealth serum laboratories was properly prepared and sterile, but contained no antiseptic, and, therefore, did not prevent the growth of micro-organisms accidentally introduced into it.

3. The rubber-capped bottle of toxin-antitoxin supplied to Dr. Thomson at Bundaberg was accompanied by no information as to the presence or absence of antiseptic.

4. The omission of antiseptic was intended to safeguard against the dangers attendant upon freezing, but the issue of this preparation without antiseptic in rubber-capped bottles suitable for repeated usage is an unsound procedure.

5. The toxin-antitoxin mixture in the bottle used by Dr. Thomson was contaminated by him with a pathogenic staphylococcus during a series of inoculations on Jan. 17th, 20th, 21st, and 24th, most probably on the last occasion.

6. The consideration of all the available evidence concerning the deaths at Bundaberg points to the injection of living staphylococci as the cause of the fatalities.

As a result of much experimental work and a critical review of the evidence, the Commission was led to make certain definite recommendations with a view to avoidance of similar tragedies in the future.

The Recommendations.—1. That biological products in which the growth of pathogenic organisms is possible should not be issued in rubber-capped containers for repeated use unless there is present in the material a sufficient concentration of antiseptic to inhibit bacterial growth.

2. That all biological products not containing antiseptic, however issued, should bear a conspicuous printed notice, both on the container and on the package, to the effect that no antiseptic is present; that they should be used immediately on opening, and any remaining product discarded.

3. That biological products should be distributed in bottles or ampoules of clear glass in which it is easier for the medical practitioner himself to detect turbidity or any other defect.

4. That the Commonwealth Department of Health should make full and careful inquiry as to whether it be advisable to substitute anatoxin or some similarly modified immunising agent for toxin-antitoxin.

5. To ensure the adoption of the most approved technique, facilities for special post-graduate training should be afforded to all medical officers entrusted with the conduct of public campaigns to diminish the incidence of disease by immunisation.

Poisoning by diphtheria toxin, it will be noted, is excluded on adequate grounds. The clinical picture in the fatal cases was not that of fatal diphtheritic toxæmia; at the autopsy the suprarenal glands were found to be normal, and the children who recovered did not show any of the characteristic sequelæ of diphtheria. No free toxin was found in the prophylactic remaining in the fatal bottle nor in many duplicate bottles taken from the batch of prophylactic incriminated. The possibility of tetanus was carefully considered and rejected. The evidence for staphylococcal infection was that the remaining fluid in the bottle used was noted as cloudy on the day after the injections, that the contamination had "almost certainly" occurred three days before the fatal injections were given, and that the remaining fluid in the bottle yielded a pure culture of staphylococcus. Of the 21 children injected 12 died; in all 9 survivors, of whom 6 were ill, abscesses developed at the site of injection, and from 5 of these abscesses a staphylococcus apparently identical with that in the fatal

[1] THE LANCET, 1928, i., 249, 1293.

bottle was recovered in pure culture. The estimate is that five million cocci, together with their products of growth, were injected into the children. The children began to suffer within six to eight hours from vomiting, diarrhœa, fever, early unconsciousness, retention of urine, and, in the younger ones, convulsions, death occurring within 24 hours in several instances. With two doubtful exceptions no metastatic staphylococcal abscesses developed in any of the survivors. The coccus isolated did not seem to possess any unusual cultural or fermentative properties and closely resembled varieties of *Staphylococcus aureus*, though it produced "a buff coloured" and not "a typically orange" deposit. An antiserum to the coccus agglutinated aureus strains typically. Apparently neither culture nor filtrate produced in laboratory animals, including *Macacus rhesus*, a picture resembling that seen in the children, though small doses given intravenously to rabbits killed in 12 to 24 hours with convulsions. Evidently higher monkeys were not available for injection. The Commissioners very fairly state that their findings are based on evidence that is suggestive rather than conclusive, that unfortunately defects in the clinical study of the cases and lack of specialised bacteriological and pathological examination of the children who died left serious gaps in the evidence, and that "short of the unthinkable experiment of injecting the living staphylococci into children, it is not possible to offer rigid proof . . . for there is not within our knowledge any previous experience of the subcutaneous injection of large numbers of living staphylococci into young children." Bacteriologists, we think, will agree that the Commission could not do otherwise than conclude that the contaminating staphylococcus and its toxins caused the deaths, and that the tragedy would have been avoided had the prophylactic contained sufficient antiseptic, a practice which is probably universal in England, America, and the Continent. So far as we can find, there are on the English market no prophylactic preparations without adequate antiseptic. On such points the Therapeutic Substances Act provides for any control considered necessary.

Two other points in the report merit attention. The Commission recommend inquiry directed towards the replacement of toxin-antitoxin mixtures by toxoid or anatoxin. No reasons for this recommendation are given in the text of the report available at the time of writing. The needles used in immunising the children had apparently been kept in methylated spirit. The phrase "sterilised in methylated spirit" occurs in the report. It is well known, and has been emphasised by T. J. Mackie [2] in a recent important review of the preparation of catgut, that methylated spirit possesses a restricted bactericidal power and that it cannot be relied upon to sterilise surgical apparatus if resistant or spore-bearing microbes are in question.

THE TRAFFIC IN NARCOTIC DRUGS.

In accordance with a precedent initiated last year, the annual report of the British Government to the League of Nations (1927) on the traffic in opium and other dangerous drugs, has been communicated to the press. It deals with the administration of the Dangerous Drugs Acts, 1920 and 1923, in Great Britain, and furnishes abundant statistical information as to the manufacture in this country of morphine and heroin and their salts, and as to the import and export of opium and its alkaloids, and of cocaine during 1927. Reference is made to the extent of the international illicit traffic alluded to in THE LANCET of July 21st (p. 133). While several seizures of drugs were made at English ports on ships of British nationality, it is satisfactory to learn that no information had been received that any firm in Great Britain had been engaged in smuggling drugs abroad, nor have any seizures of drugs of British manufacture been reported during the year. It may be well worthy of consideration whether, if all members of the League of Nations and States parties to The Hague Opium Convention of 1912 had passed—and enforced—legislation like the Dangerous Drugs Act, 1920 and 1923, which gave effect to that Convention, the international situation in regard to the commerce in narcotic drugs would not be more satisfactory than it is. The amount of British morphine manufactured and exported continues to fall. While a few years ago some 14 tons were in one year exported, in 1927 the amount was 66,107 oz. The figures for heroin are less satisfactory, 17,427 oz. having been manufactured against 11,113 oz. in 1926; 11,165 oz. were exported against 6799 oz. in 1926; 4673 oz. were consigned to France, a considerable increase on the amount for 1926. Of 107,042 lb. of raw opium arriving through the approved ports of London, Liverpool, and Southampton, no less than 86,080 lb. came from India, and only 19,888 lb. from Turkey. As the morphine content of the Indian drug was 10·98 per cent., against 11·12 per cent. in the Turkish, the old prejudice against the pharmaceutical use of the Indian variety, by reason of its alleged poverty in the alkaloid, appears to have been ill-founded. Hitherto there has been no production of cocaine from the leaves, or by refining crude cocaine, in Great Britain, but in 1927 a licence was granted to Messrs. May and Baker, Ltd., of Wandsworth, to carry on experiments in such manufacture. The licence precludes the marketing of such produce without the special sanction of the Home Office.

Two important seizures of cocaine have been made in London this year, one of Japanese manufacture smuggled in by a Lascar on a vessel from the Far East; the other of German manufacture exported to Lithuania and thence smuggled in by a Lithuanian resident in London. There were 60 prosecutions under the Dangerous Drugs Act in 1927; 45 persons were convicted and fined, or imprisoned, or dealt with under the Probation of Offenders Act, while five were recommended for deportation. It appears that a considerable amount of morphine (65,746 oz.) was used in 1927 for the manufacture of codeine. This alkaloid is not scheduled as a dangerous drug, although in the first draft of The Hague Convention it was included. The question of applying to it the provisions relating to morphine and heroin has engaged the attention of the Opium Advisory Committee at Geneva.

ACUTE EMPYEMA.

In a recent article on the treatment of acute empyema, Dr. Antoine Basset maintains [1] that there is no longer any uniformity of method in dealing with this condition, nor is there any soundly established doctrine to guide the practitioner when faced with this emergency. Prior to the epidemic of influenza in 1918, the treatment of empyema was similar to that of any other collection of pus—viz., immediate evacuation and drainage. To render these more effective, costal resection was usually practised. The customary method was adopted for the treatment of empyema complicating broncho-pneumonia during the earlier months of the pandemic, but the results were profoundly disappointing. In certain of the American military camps the post-operative mortality is said to have reached the figure of 84 per cent. As a consequence less drastic methods were advocated: aspiration with irrigation of Dakin's or Murphy's solution replaced the classical operation of costal resection and open drainage. The advantages to be derived from conservative treatment, at least as a temporary measure, were discussed at the Twenty-third Congress of the French Surgical Association in 1920, and the matter has been debated ever since. Dr. Basset advises postponement of operation when empyema complicates acute pulmonary disease; in such cases

[2] An Inquiry into Post-Operative Tetanus. A Report to the Scottish Board of Health. See THE LANCET, 1928, i., 1187.

[1] Traitement des pleurésies purulentes aiguës de la grande cavité, Arch. med.-chir. de l'appareil resp., December, 1927.

he considers it advisable to wait until the pneumonic process shows signs of retrogression. Meanwhile the patient may be relieved by aspiration of pus and supported by medical treatment, including vaccine and serum therapy. When operation is decided on, a local anæsthetic should be used and as a rule the most effective drainage will be secured by resecting 4 or 5 cm. of the tenth rib in the posterior axillary line. Pneumococcal empyema in children is often a relatively benign infection, and for these cases repeated aspirations may suffice. They are certainly to be preferred during the acute pneumonic stage. Rib resection should also be avoided in early childhood—i.e., before the age of 18 months. But there is an exception to the statement that in the presence of an acutely diseased lung preliminary treatment by aspiration is the method of choice. A putrid empyema, or one associated with gangrene, should be freely drained at the earliest possible moment whatever the condition of the subjacent lung. Dr. Basset lays stress on the importance of a careful cleaning of the empyema cavity by gauze swabs at the time of operation. Neglect of this precaution may lead to blocked tubes and ineffective drainage. Short wide tubes should be used and the employment of a Tiegel's valve will permit free exit of pus while preventing the entrance of air during inspiration. A simpler method of attaining the same end is, of course, to connect the drainage-tube with a reservoir containing antiseptic solution.

INTESTINAL BACTERIA IN PERNICIOUS ANÆMIA.

IT is rather more than 20 years since Dr. C. H. Herter pointed out that *Bacillus welchii* was abnormally abundant in the fæces of cases of pernicious anæmia, and rather before that time Dr. William Hunter began to urge the ætiological importance of gastric and intestinal streptococci. Both organisms are hæmolytic in the sense that they can produce extracellular toxins which are capable of dissolving red corpuscles both in vitro and in the body of experimental animals. The capacity of *B. welchii* in this respect is especially powerful, and Dr. H. G. M. Henry and others have worked out the conditions under which its hæmotoxin is produced, how it acts in the body, and how it stimulates the production of an antitoxin. That the chronic anæmia of pernicious anæmia is directly due to any such antigenic hæmolysin is on general grounds very unlikely; the body would become actively immune, and if it did not it should be easy enough to make it passively immune by injecting *welchii* antitoxin; this has no effect on the course of the disease. But if *B. welchii* and streptococci do not cause the disease directly by their hæmolysins, it does not follow that they play no rôle in its pathogenesis. The absence of acid from the stomach is a grave abnormality and is obviously likely to upset the bacteriology of the alimentary tract, at any rate in its upper part. An abnormal abundance of organisms has been described by a number of observers, and the whole subject is reviewed in a comprehensive way in the current number of the *Journal of Pathology and Bacteriology*, by Dr. Stanley Davidson, of Edinburgh, who has elaborately studied 41 cases of pernicious anæmia along with normal controls and examples of other diseases, examining the fæces and the gastric and duodenal contents; these two last cannot, he says, be separated, since the patulous pylorus of pernicious anæmia leaves the stomach and duodenum in free communication. His results are, briefly, that in pernicious anæmia there is a great numerical increase in *B. coli*, streptococci, and *B. welchii*, both in the stomach and in the stools. These microbes are normal inhabitants of the human alimentary tract, and a careful investigation of their varieties failed to show any qualitative difference between those found in healthy persons and those from pernicious anæmia. He concludes that there is no evidence that any individual type of organism is specifically related to pernicious anæmia. At the same time, he attributes great ætiological importance to the quantitative increase of bacteria, especially at levels in the small intestine which in normal persons are relatively free from bacteria. It may be supposed that these act by producing, directly or indirectly, substances which, passing by the portal circulation, impede the action of the liver. The gastro-duodenal sepsis runs parallel with the achlorhydria, and both continue unaltered after cure by liver. On this view pernicious anæmia is a pathological but not an ætiological entity. The changes described in the flora of the alimentary tract are not quite invariably present, and other factors may less commonly play an important part. Dr. Davidson mentions a hereditary or constitutional element in the disease, but the evidence for this is rather nebulous.

MEDICAL HISTORY STATEMENTS.

A RECENT paragraph in the *Solicitors Journal* draws attention to some observations of the county court judge at Birmingham upon the practice of medical witnesses. In workmen's compensation and other cases it is often necessary that the medical practitioner should ascertain the patient's medical history before diagnosis. But the statement which the patient gives may be closely connected with the very facts which are in dispute. In the Birmingham case apparently the plaintiff's representative suggested that the medical witness had exceeded his professional duties in obtaining such a statement. On the other hand, on behalf of the defendant it was stated that the statement was obtained by the medical witness in the presence of the patient's own doctor and was written down in the presence of both. His honour Judge Ruegg, K.C., observed that nothing unusual had been done, but that it was becoming a habit with doctors to take particulars of this kind, and then to come into court and give evidence of the contents of the statement. Upon this position two comments seem proper. In the first place it is always the duty of a medical witness to distinguish between facts which are within his own direct knowledge and matters of which he has merely been told. This distinction is notoriously of great significance in the process of certifying a patient under the Lunacy Act. The second comment is that which the county court judge himself made. He thought it objectionable that doctors should obtain statements in the way mentioned, because, if a patient knew that statements were to be obtained in that way, he would hesitate to go to a doctor. Subject to these two comments it is clear that a medical witness's evidence may be useless, unless he has been made aware of the patient's medical history, and the witness is entitled to state how far the patient's condition is consistent with, or could be explained by, that history. It does not appear that an experienced county court judge could ever be misled by medical evidence properly so obtained and tendered.

SCHOOL MEDICAL OFFICERS AND THE NOTIFICATION OF MENTAL DEFECT.

THE passing of the Mental Deficiency Act, 1927, has made it necessary for the Board of Education to revise their regulations governing the notification of children and the draft of the new regulations has recently been published. These will come into force on Oct. 1st, 1928. They are decidedly shorter and simpler than the old ones, and in addition to containing certain minor alterations consequent on the changes in the Act, they make an alteration which should be welcome to local education authorities and their medical officers. The Act requires, in the case of defective children of 7 years and upwards, who are incapable by reason of mental defect of receiving benefit or further benefit in special schools or classes, or who cannot be instructed in a special school or class without detriment to the interests of the other children, that their names and addresses shall be notified by the local

education authority to the local mental deficiency authority, who will then be responsible for them. Under the old regulations, if the child whom it was proposed to notify was not an idiot, imbecile, or moral imbecile, the Board of Education required that their sanction should be obtained before such notification was made. Under the new regulation this has been waived, and cases in future can be notified on the certificate of the school medical officer without reference to the Board. There is a provision that in the case of the local education authority being in doubt regarding any child so certified, they may refer the matter to the Board before discharging their statutory duty of notification, and such reference to the Board is compulsory in the case of blind or deaf children coming under Section 69 of the Education Act, 1921. It may happen that a child is certified by the medical officer as not being incapable of receiving benefit from instruction in a special class or school, but is nevertheless considered to be in need of supervision, guardianship, or institutional care. In this event the case is to be referred to the Board, and if the Board certify that there are special circumstances which render it desirable for the child to be dealt with in this way, it then becomes the duty of the local education authority to notify the case to the local mental deficiency authority. In the case of children about to be discharged from special schools on or before attaining the age of 16 years, the local education authority may still, as previously, decide as to whether notification should be made without reference to the Board. We think that the alterations which have been made will tend to simplify administration, and they are doubtless inspired by an increased confidence on the part of the Board in the efficiency of school medical officers and local education authorities.

PHARMACY AND BIOCHEMICAL DISCOVERY.

ADDRESSING the British Pharmaceutical Conference at Cheltenham on July 24th, the chairman, Mr. R. R. Bennett, B.Sc., F.I.C., selected certain aspects of biochemistry of importance to those engaged in the practice of pharmacy, dealing in succession with the practical applications of the study of hormones and vitamins. More than ever before the pharmacist, he said, is dealing with remedies which can only be assayed and standardised by biological methods, a fact which was bringing into prominence the increasing work carried out at the Pharmaceutical Society's pharmacological laboratories. The General Medical Council had been criticised for its failure to introduce biological methods of standardisation into the current British Pharmacopœia, but, said Mr. Bennett, the Council should not be blamed for that; at the date of its issue the Council could not have prescribed biological tests as there were no official standards for such tests, nor had the Council then any power to enforce such standards in the absence of a laboratory where tests could be made. It was only the coming into force in August, 1927, of the Therapeutic Substances Act of 1925 which had brought into being a Joint Committee charged with the duty of prescribing standards, tests, and units of standardisation for therapeutic substances, the purity and potency of which could not be adequately tested by chemical means. Standards had now been defined for a number of such substances, laboratories had been appointed to prepare and keep the standards, and machinery for controlling their application had been created. The Pharmacopœia Commission which would soon come into existence would, he said, accordingly be able to include in the next edition of the Pharmacopœia any therapeutic substance for which a standard of reference had been defined by the Joint Committee, and to introduce a biological method for standardising any substance for which a standard had been set up. Mr. Bennett congratulated the Pharmaceutical Society on its readiness to adapt itself to these fundamental changes, and concluded with the remark that the future of pharmacy will depend upon the continued cultivation of the scientific habit of mind and upon the power of confronting new conditions and new difficulties with systematic knowledge and perfected technique.

ETHYL PETROL.

THE internal combustion engine has its marked likes and dislikes, and, last autumn, the first consignment reached this country of a kind of fuel which had been found in America to abolish a tiresome form of engine trouble; but this ethyl gasoline, as it was called, contained a small proportion of lead tetra-ethyl in the manufacture of which distressing cases of lead poisoning were known to have occurred. The question arose whether the consumer might not also run some risk from its use, and a discussion in the House of Lords last February elicited the statements that Sir William Pope regarded lead tetra-ethyl as a poison likely to be absorbed through skin abrasions and by the lungs, and that Prof. H. B. Baker believed it might reach the body through the unabraded skin. As a result of this discussion the Minister of Health agreed to appoint a Departmental Committee to inquire into the possible dangers to health resulting from the use of motor spirit of this kind. This Committee,[1] which included distinguished chemists, toxicologists, and medical administrators, has now issued an interim report,[2] the message of which may be stated at once to be: "there is no evidence to show that the use of ethyl petrol as a motor fuel involves more dangers to health than the use of ordinary petrol." This favourable report was not unexpected in view of such evidence as is presented in the report[3] by Dr. Alice Hamilton, of Boston, to the International Labour Office. From this report it was already clear that scrupulous care has practically eliminated risk from the manufacture of tetra-ethyl lead and also from the process of blending it with petrol. Moreover, the workers so employed can be carefully supervised and fully protected. In regard to the chauffeur and the garage man who fills petrol into cars, a committee of experts issued in 1926 a considered report based on experimental work. No definite signs of lead absorption were detected after exposures of two years, and no good grounds were found for prohibiting the use of ethyl petrol as a motor fuel, provided that its distribution and use were controlled by regulations. Evidence, however, was forthcoming that, quite apart from the use of lead in petrol, lead dust does accumulate wherever motors are garaged, and that whether it originates from paint, from rubber, or from accumulators the risk of poisoning seems comparable to that which might arise from ethyl petrol. The risk from lead, however, is regarded as definitely less than that from carbon monoxide, which nowadays necessitates free ventilation of garages and motor-sheds.

The Departmental Committee's report brings Dr. Hamilton's monograph up to date and contains the evidence of Dr. J. P. Leake, of the United States Public Health Service, who assured the Committee that although careful search had been made for possible injury to health from the use of ethyl petrol, no instance of injury had come to light. It is true that there is no compulsory notification of industrial lead poisoning in the U.S.A., but Dr. Leake's inquiry extended over private sources, press-cutting bureaux, and the health authorities of each separate State, and in view of the publicity which has been drawn to this fuel it is hardly likely that any cases of poisoning should have escaped notice. In regard to the risk

[1] The members of the Departmental Committee appointed on April 2nd, 1928, are Sir Frederick Willis (Chairman); Mr. J. C. Bridge, F.R.C.S.E.; Sir George Buchanan, M.D.; Mr. A. Chaston Chapman, F.R.S.; Prof. W. E. Dixon, F.R.S.; Major W. R. Galwey, M.B.; Mr. C. H. Lander, D.Sc.; Sir Charles Martin, F.R.S.; Mr. D. R. Pye; Sir Robert Robertson, F.R.S.; Sir William Willcox, M.D.; with Mr. S. F. S. Hearder (Secretary).

[2] Interim Report of the Departmental Committee on Ethyl Petrol. Cmd. 3159. H.M. Stationery Office. 1928. 4*d*.

[3] Revised by the Correspondence Committee on Industrial Hygiene and published as Brochure No. 87 of the encyclopædia entitled "Occupation and Health." Geneva, 1928.

of inhaling lead from ethyl petrol, Sir Robert Robertson was able to assure the Committee that the first half of petrol evaporated from the mixture is entirely free from lead tetra-ethyl. The risk to health from spillage, although unproved, is regarded as a possibility not to be ruled out, and is to be the subject of further experiment. Absorption through the skin may not be as important as was supposed, for it has been shown that a monkey may be anointed 760 times with ethyl petrol, at intervals of about a day, without more than the merest trace of lead being found in its tissues after death. The Committee has been especially impressed by the reassuring fact that garage workers in the U.S.A. who have been handling ethyl petrol continuously for four to five years show no signs of lead poisoning. Although satisfied on this point the Committee emphasises the warning that ethyl petrol should be used only as a motor fuel and not for such purposes as cooking or cleaning. Sales in this country are, in fact, governed by regulations which require the dyeing of the substance red as an additional check against its use otherwise than as motor fuel, the labelling of cans and pumps, and the issue of notices to the public. The Departmental Committee has thus reported definitely on the main point at issue, although, as has been said, further investigations are to be made on certain points. In the meantime, the city of New York has just rescinded its prohibition on the sale of ethyl petrol within its borders.

THE M.A.B. ANNUAL REPORT.

THE Metropolitan Asylums Board has just published its annual report [1] for the year 1927–28, being the thirtieth year of issue. It is the familiar orange paper-covered volume of 350 pages, containing first an account in 75 pages of the Board's multifarious activities intended for the enlightenment of the public, then a number of elaborate financial and other tables, and, thirdly, a series of monographs on one aspect or another of the clinical work done under the auspices of the Board. For those who have the ingenuity and patience to find their way about this report, it is a veritable mine of information. There may still be readers who need to be reminded of the enormous scope of the Board's activities, dealing as it does with the reception and care of various classes of sick and infirm from all the unions and parishes in London. The number of occupied beds in the various institutions of the Board on the last day of the year under review was 20,746, and the total accommodation includes 8444 beds for fevers (excluding 60 for ophthalmia neonatorum and 52 for venereal diseases), 2168 beds for tuberculosis, 2006 beds in children's institutions, 9387 beds in mental hospitals (not including 355 for sane epileptics), and, finally, 734 beds in the training ship *Exmouth*, and 828 beds in casualty wards for the poor. The total annual expenditure was round about £2,350,000, allotted to the four main groups—feeble-minded, fevers, tuberculosis, and children—in the proportions roughly of 63 : 96 : 26 : 25. During the year the fever accommodation has been revised and reallotted to conform with the standard laid down by the Minister of Health—viz., 1872 cubic feet, 144 square feet, and 12 linear feet per bed, without substantial diminution in the number of beds. In these hospitals a salutory change of policy resulted in the allocation of 1581 beds to measles at the beginning of April last. Although the daily average for diphtheria during the six winter months was as high as 2483, not many scarlet fever patients were displaced, owing to the use of the Joyce Green Hospital at Dartford as a safety-valve. The concentration of cases of puerperal fever in two of the infectious hospitals, one on either side of the river, has facilitated a research by Mr. J. M. Wyatt, the obstetric consultant, into the method of infection in puerperal women; in each case, when a patient is sent in, a swab is taken by the accoucheur from the throat of the nurse or midwife in attendance on the woman. At the Western Hospital a small number of beds has been allocated, as before, to cases of poliomyelitis in the acute stage, under the supervision of Mr. George Perkins. At the North-Western Hospital a clinic was opened last June for the treatment by radium of cancer of the uterus under the supervision of Mr. Comyns Berkeley; the allotment of eight beds will suffice for the full use of two sets of radium applicators. The experiment of assembling cases of encephalitis lethargica at the Northern Convalescent Hospital, Winchmore Hill, has been continued, admission of extra-metropolitan cases having been sanctioned in order fully to utilise the allotted beds. This experimental unit, as Dr. G. A. Borthwick frankly admits, has not been productive of curative results, although it has proved valuable as an observation station, and on this ground the Board has approved its continuance. Artificial sunlight treatment has now been installed at four hospitals, two on each side of the Thames. Long Reach Hospital being under reconstruction, in May last cases of small-pox overflowed from the temporary accommodation loaned by the Willesden U.D.C. at Kingsbury, into the large reserve hospital at Joyce Green. The type of small-pox case in London now approximates closely to that which has prevailed for several years in the northern counties. In the first half of the present year 172 cases were admitted from 17 different metropolitan boroughs. During the year 437 students (of whom 79 were women) attended courses of instruction at the Board's fever hospitals. At the mental hospitals a revised dietary came into force in June, admitting of the use of fresh fruit, when obtainable, on two days a week, while a canteen for the use of patients has been established at Darenth Training Colony. A difficult situation is arising from the steady increase in the number of young able-bodied men seeking admission to casualty wards, and the Board proposes to reinstate the breaking of stone by hand as a deterrent task. No more has here been attempted than a brief outline of the Board's activities; we shall have occasion to return to some of the clinical reports.

[1] From the Office of the Board, Victoria Embankment, London, E.C. 5*s*. The medical portion of the volume is obtainable in four separate sections, price 1*s*. each.

CONTRIBUTORS to the Ferrier Memorial Fund met on July 18th under the chairmanship of Sir Charles Sherrington, and resolved to invite the Royal Society to accept the sum of £1000 in trust to found a David Ferrier Memorial Lecture. The balance of the fund will be applied as seems most suitable when the total contributions are known. The Fund is to be closed on Sept. 30th.

EPSOM COLLEGE—Founders' Day was observed at Epsom College on Saturday last, July 28th, when the celebration included service in chapel, distribution of prizes, and a garden party on the College playing-fields, where many parents and supporters of the College were spectators of a well fought-out cricket match between the College and the old boys. After service in chapel, and a luncheon-party at which the Council of the College acted as hosts, an adjournment was made to the big school-room to hear the headmaster's report, after which the prizes were distributed by Lord Riddell. The headmaster, Mr. Arnold Powell, was able to point to a year of successful work and successful play, the number of leaving certificates obtained being large, while the successes recorded in scholarship competitions and public examinations were numerous. Further, during the year the old Epsomians had, he said, given a good account of themselves, and this was indicated by tripos lists at Oxford, Cambridge, and London Universities, and by the pass-lists of various corporations and medical schools, the Law Society, and the Institute of Actuaries. Lord Riddell then distributed the prizes and delivered a short address in which he interested and amused the audience by a character sketch of Hippocrates, whom he held up for the imitation of youth as a fine example of independent thinking, high purpose, and power of mental concentration. During the afternoon the band of the 1st Battalion of the King's Own played appropriate selections, while in the evening a choral performance of *Iolanthe* was given by the College Musical Society. The organisation of the celebrations was excellent.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

REPRESENTATIVE MEETING: JULY 21ST-24TH.

(*Continued from p. 196.*)

Lunacy Law Reform.

Dr. R. L. LANGDON-DOWN, Chairman of the Committee on Lunacy Law and Mental Disorder, introduced the Council's memorandum on the Report of the Royal Commission published in 1926. He said that the Council did not regard as satisfactory the proposal that mental patients should be classified as "voluntary" and "involuntary." The Commissioners recommended that those who entered a mental institution on their own initiative should be termed voluntary patients whilst all the others were to be placed under compulsory treatment only after medical examination and on the order of a magistrate. Thus the proposed Provisional Treatment Order, except in the case of the voluntary boarder, involved the intervention of a legal official at the outset for every patient who required institutional treatment. This was by no means desirable, as the memorandum pointed out; in fact, if the early treatment of mental disorders was to be realised, legal intervention should be limited to cases in which the patient, *though capable of volition*, definitely refused and resisted institutional treatment. There were numerous patients in whom the will was in abeyance; many of these made an early recovery, and they ought if possible to be saved from the stigma of certification. The Council thought that they should be admitted to appropriate institutions on an "authorisation for treatment" given by a relative or friend and supported by the recommendation of two practitioners. On such terms it would be possible to get relatively early treatment, whereas the Commission's plan, by continuing in this respect the formalities of the existing law, would discourage a patient's relatives from taking steps in good time. The intervention of a justice was the great deterrent to early treatment at the present time.

Dr. DAVID ROXBURGH, for Marylebone, proposed that the report be referred back for further consideration on the ground that the Council had not "taken steps to promote legislation which would protect the certifying practitioner from vexatious litigation." There was, he said, a sword hanging over the head of anyone signing a certificate of insanity, and it must somehow be removed. Sir Frederick Willis, the late Chairman of the Board of Control, had stated in the press that the Board had for ten years been making strenuous efforts to get the law of lunacy altered, but public apathy had always resulted in measures of reform being crowded out of Parliament. As a powerful body like the Board had failed in all this long time to get anything done, the only thing left to the profession was to frighten the public into taking an interest in the subject. This could be done if medical men as a body would threaten not to continue the certification of the insane, and to do this would be a public service.

Dr. Roxburgh's motion to refer the report back to the Council was lost.

Dr. TEMPLE GREY did not approve of the Commissioners' statement, quoted in the memorandum, that "insanity is, after all, only a disease, like other diseases. . . ." This was not true from the point of view of diagnosis—the point of view of the general practitioner. In cases where the judicial authority intervened to secure detention in the public interest for persons of unsound mind, that authority ought, he considered, to accept responsibility for such detention.—Dr. LANGDON-DOWN said that proposals of this kind lost sight of the other functions performed by doctors under the Lunacy Act. A magistrate could not take over a medical man's whole responsibility, since the latter would always be liable to an action for lack of care in making out the certificate. It would be wholly unsatisfactory, indeed, if the doctor were released from the duty of taking care.—To this Dr. GREY replied that absolution from the duty of care did not mean the right to be careless. He thought that a magistrate should always be called in if the patient proved resistant, and in the comparatively small proportion of cases where this happened, the law should accept the responsibility. After some further discussion this view was accepted by the meeting, which passed the following resolution, to be added as a rider to the Council's report:—

> That the Representative Body, whilst thanking the Lunacy Law and Mental Disorder Committee for their Memorandum, considers that further protection for the certifying medical practitioner is required; that is to say, that the judicial authority when it intervenes shall accept responsibility for the detention of persons of unsound mind.

Dr. W. JOHNSON SMYTH and Dr. E. K. LE FLEMING, for Bournemouth, put forward another amendment to the original motion accepting the memorandum. This ran as follows:—

> That if, under Sections 13 and 16 of the Lunacy Act, 1890, a magistrate make an order to one or two medical men as the case may be (two medical men under Section 13 and one under Section 16) to examine a person believed to be of unsound mind, it should be considered that the magistrate should be solely responsible as an instrument of the law and the doctors should have the status of a witness and enjoy the immunities of a witness.

Dr. GREY had previously pointed out that the words "status of a witness" could not be applied in the circumstances; properly speaking, no one but a witness could have the status of a witness. The Bournemouth amendment was, however, carried, after references to Section 16 had been deleted.

Conflicting Medical Evidence in the Courts.

Dr. R. G. GORDON, for Bath, drew attention to the Assize Court's decision in the case of Tyndall *v.* Alcock. Heavy damages had been given against Mr. Alcock, largely on evidence which seemed to be wise after the event, and on appeal the judge had said in so many words that if the original decision had been in the hands of himself and his colleagues, the result would no doubt have been different. As no new facts had emerged he was, however, unable to reverse the opinion of the jury. Dr. Gordon invited the Representative Body to say that it regarded the case with consternation since it "would seem to expose any surgeon who, although operating in good faith and with due precautions, failed to obtain a perfect result from his operation to be found in damages by a jury of laymen." It was, he said, impossible to expect that the jury system would be altered, but a certain amount of abuse was creeping into the practice of giving medical evidence in the law courts, and it was desirable that the question should be ventilated. Possibly a medical assessor—an "impartial person"—ought to sit with the judge to help him in the weighing of technical evidence. On behalf of Bath he proposed that the Council should consider "whether means cannot be found to ensure that expert witnesses appearing on opposite sides in a case shall not so confuse the issue by a divergent representation of facts that a lay jury cannot assess these facts at their true value."

The meeting asked Mr. O. Hempson, the Association's solicitor, to express an opinion on this proposal, and he thought that, if passed, it might well be quoted against members of the profession in cases of alleged negligence. It would always be possible for litigants to obtain the services of a certain class of medical man, and the weight of such witnesses' opinions would be increased if they could be represented as men who had courage enough to put the interests of truth before those of their profession. Mr. Hempson believed that it would be a great mistake to pass a resolution suggesting that the B.M.A. deplored medical men giving evidence against each other.

Dr. Gordon consented to withdraw his motion.

"An Infernal Machine."

The fact that England may still play some part in Irish affairs was brought home to the meeting by Dr. J. C. LOUGHRIDGE and Dr. J. R. GILLESPIE, from whose speeches it appeared that Belfast Corporation, in the course of departmental reforms, had introduced a system of "clocking in and out." To this indignity even the medical officers were asked to submit, and one of them, rather than do so, had incontinently resigned. They felt very keenly about this in Ireland, and they invited the Representative Body to say that it objected to medical officers "being required to record the time of their arrival at, or departure from, duty on a recording machine, as it is derogatory to the dignity of the profession." There was all the difference between signing one's name in a book and using an infernal machine; the second method implied disbelief in one's honour. The B.M.A. had no more loyal adherents than in Northern Ireland (statistics of membership were here quoted), and "God help us," said Dr. Gillespie, "if we can't have the help of this mighty organisation."

They got it, the motion being carried with no dissentient voice.

Public Health and Poor-law.

Several resolutions introduced by Dr. E. LEWYS-LLOYD, Chairman of the Public Health Committee, were carried without much discussion. The first laid down that all tuberculosis officers whose clinical work in areas is not subject to detailed supervision by the chief tuberculosis officer should be entitled to a minimal commencing salary of £750 per annum. The second dealt with pathological reports, and ran as follows:—

That the work of laboratories established by public health authorities should, in the opinion of the Representative Body, neither provide for pathological examinations nor furnish reports on individual cases, except (1) in cases which directly involve questions of public health, or (2) where provision is made for such reports by statutory right, or (3) when the patient is stated by the practitioner to be unable to pay a fee; provided that in parts of the country where facilities for pathological examinations and reports are not afforded either by private practitioners (pathologists) or by the service of the local hospital, the public health laboratory may properly make examinations and furnish reports as these are required by practitioners for patients who are in a position to pay the usual professional fees.

The meeting agreed that in areas where there are cases of small-pox, and where propaganda work in favour of vaccination is not carried out by the local authority, the local division should try to stimulate the authority to do this work or else do what it can to supply the deficiency.

Another resolution, described by one representative as the "anchor of the general practitioner's freedom," made clear the Association's policy that "domiciliary attendance should, in the best interests of the patients, be provided by private practitioners in the area concerned and not by a whole-time medical officer." This was not to prejudice the position of any medical officers at present holding whole-time appointments in which domiciliary attendance was one of the duties, nor would it, of course, apply in areas where no general practitioner was willing to undertake the work on suitable terms.

The question of the combination of the duties of medical officers, poor-law medical officers, and public vaccinators was discussed in the light of probable changes in poor-law administration. Dr. H. B. BRACKENBURY, Chairman of Council, explained that the combination of these offices was now approved by the Minister of Health, and Dr. MILBANK SMITH said that when the poor-law was abolished, it must be ensured that vaccination work was not transferred to the medical officer of health. The rights of the private practitioner must be safeguarded. The meeting agreed that there was no objection in principle to the combination in one and the same whole-time appointment of (*a*) the duties of a M.O.H. and those of a poor-law institutional medical officer, or (*b*) the duties of an M.O.H. or poor-law institutional officer and those of a public vaccinator. But the application of these principles in any individual instance "must be governed by local circumstances and by the opinion of the Division or Divisions concerned."

Spa Treatment of Panel Patients.

Dr. H. G. DAIN, Chairman of the Insurance Acts Committee, introduced a scheme drawn up by the British Spa Federation for the provision of treatment for insured persons at various British spas. He said that the approved societies were not yet in a position to provide this form of additional benefit, but they might be able to do so out of their "disposable surpluses" after the next valuation. Meanwhile the Federation wished to be ready, and their scheme need cause no anxiety to the private practitioner, since all it demanded from him was the filling-up of a simple form of recommendation.

Criticisms were nevertheless raised from various points of view. Dr. A. T. JONES, for North Glamorgan and Brecknock, wanted to know exactly what was the position of private practitioners in the towns to which the cases would be sent. What was the definition of the "spa physician" by whom the cases would be treated? He wanted an assurance that the care of these patients would not be the prerogative of a few.—Dr. H. M. RAVEN (Broadstairs) thought that the fee of a guinea given to the spa physician for three weeks' treatment, exclusive of radiographic and bacteriological investigations, compared favourably with the fee of "about a shilling" which seaside practitioners got for three months' temporary residence by an insured person in their area.—Dr. L. W. BATTEN suggested that the spa physician's privileges were better defined than his duties.

Dr. E. R. FOTHERGILL, who had helped to draw up the scheme, agreed that participation in the treatment ought to be open to all those who had good credentials, and should certainly not be reserved for members of hospital staffs. Dr. DAIN cleared up the position by quoting certain criteria of a specialist—namely, that he should satisfy one or more of the following conditions:—

1. That he holds or has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service to be rendered, and has had actual recent practice in performing the service to be rendered or services of a similar character; (2) that he has had special academic or post-graduate study of a subject which comprises the service to be rendered, and has had actual recent practice as aforesaid; or (3) that he is generally recognised by other practitioners in the area as having special proficiency and experience in a subject which comprises the service to be rendered.

This definition was accepted by the meeting, and Dr. JONES was assured that it did not preclude panel practitioners from being recognised as suitable persons to give treatment of the kind contemplated. Dr. E. SOLLY (Harrogate) said that there was now a very strong movement towards the provision of so-called spa treatment for insured persons, and on no account must this treatment be given by persons with no special experience.—Dr. F. G. THOMSON (Bath) explained what services the spa physician would render, and after Dr. DAIN had summed up the case in its favour, the scheme was approved with only two or three dissentients.

What is a Spa?

An entertaining discussion arose on an attempt by the Council to define spa treatment as "treatment at a place possessing a supply of natural mineral waters of reputed therapeutic value with facilities for their application. This implies the existence of suitable buildings, apparatus and trained personnel for work in bathhouses and other physiotherapeutic departments." Dr. E. WARD, for Torquay, moved that the word "mineral" should be deleted so that the definition might include sea-water, and this

proposal was warmly seconded by Dr. JOHNSON SMYTH, of Bournemouth, who also drew attention to the excellent facilities provided for the treatment of rheumatism at certain seaside resorts.—Dr. BRACKENBURY protested vigorously against this tampering with the definition. It would mean, he said, that nearly every town and village round the coasts of the Empire could claim to be a spa—and most of those inland as well. But the claims of seaside watering-places had made a strong impression, and Torquay's amendment was carried. A proposal by Mr. BISHOP HARMAN to destroy its general effect by inserting the word "approved" before "water" was rejected with ignominy, but Dr. BRACKENBURY eventually managed to persuade the representatives that the amended version was unsatisfactory, and the definition was referred back to the Council for further consideration.

Contract Rate for Juvenile Oddfellows.

A lively debate arose on the Council's decision that a standard rate of 8*s*. 8*d*. per head per year, including drugs, was acceptable for medical attendance on juvenile members of the Manchester Unity of the Independent Order of Oddfellows. This body has found its numbers diminishing through insufficient entries into the juvenile lodges. Failure of recruiting has been due to medical benefit being no longer given in many areas because it costs too much, and the Manchester Oddfellows have approached the B.M.A. to see whether such benefit cannot be provided at an economic rate. The policy of the Association has been that the same fee should be paid as under the National Health Insurance Acts—namely, 9*s*. plus 2*s*. 3*d*. or thereabouts, including medicine—but this policy, Dr. BONE reported, has been more honoured in the breach than the observance. There were few areas, he said, where anything like a capitation fee of 8*s*. 8*d*. had been obtained for dependants of the classes insured under the Health Insurance Acts, and the Council thought that it was a fair fee for the particular work to be done. There were in the Society 151,000 juvenile members, and the capitation fee at present being paid on their behalf was between 6*s*. and 7*s*. The profession would gain some £20,000 by a uniform rate of 8*s*. 8*d*., and in comparing this rate with fees received in the public medical service it must be remembered that there would be no deduction for the costs of collection and expenses generally, and that the service given would be relatively restricted as the children were under 16 years of age and needed less attention. Dr. BRACKENBURY said that the advantage of getting rid of records, of the need of certification, and of the disciplinary machinery was more than equivalent to any drug fees the practitioner would get if he had to provide the patients with medicine. He thought that 8*s*. 8*d*. was at least equal to the fee now being received under the Insurance Act.

This view was challenged by several representatives, whilst others maintained that 13*s*. per head per annum could be secured in many areas. Some pointed out that children should receive more and not less attention than adults. Dr. LEWIS LILLEY, for Leicester and Rutland, moved that the standard rate be approved "always provided that in any area in which a higher rate at present is paid this rate shall be allowed to stand, due regard being given to the special conditions and scope of service rendered in such area." But this amendment was lost, and the meeting finally approved the Council's resolution by a majority of 81 to 63. This resolution not only agreed to the standard rate of 8*s*. 8*d*., but also authorised the Council to approve a slightly lower rate in areas where, owing to economic conditions, the standard rate was not feasible. It laid down "that it be an essential part of this arrangement that there must be free choice of doctor by patient and of patient by doctor."

As the vote did not show the necessary two-thirds majority in favour of the resolution, it will not become part of the policy of the Association.

Coördination of Hospitals.

The Council having approved a memorandum for presentation to the Minister of Health, this was introduced to the Representative Body by Mr. MCADAM ECCLES, Chairman of the Hospitals Committee. It outlines a scheme based on the assumption that poor-law hospitals will shortly come under the control of county and borough councils. The first step in coördinating their work with that of the voluntary hospitals must, in the Council's opinion, be the establishment of a central advisory authority appointed by the Ministry of Health. This "central consultative hospitals council" should map out the country into areas—each served by an "area coördinating hospital committee"—containing both voluntary and municipal hospitals. These would again be subdivided and, as suggested in the Interim Report of the Consultative Council on Medical and Allied Services, 1920 (the Dawson Report), all the hospitals in a given district would be grouped round a central or base hospital—generally one of the bigger voluntary hospitals. This would be expected to set the standard of hospital practice and be the chief centre of education and research. As the "area coördinating hospital committees" would generally cover districts too large for administrative control, each group of hospitals would work under the direct advice—and in some respects administration—of a group hospital committee. A public hospital, when not itself the central or base hospital, should develop in coöperation and not in competition with the voluntary hospital. The responsibility for treatment in public hospitals could be undertaken by a visiting medical staff (on a part-time basis) with the assistance of a resident medical staff; but practitioners treating patients for whom the Government or local authorities are responsible, should receive either an honorarium or a fixed salary for definite services and responsibility.

A proposal to refer the memorandum back to the Council for further consideration was made from different points of view by Dr. E. W. G. Masterman, for Camberwell, and by Dr. Graham Little, M.P.

Dr. MASTERMAN said that this was a consultants' scheme. In the opinion of all the medical superintendents of poor-law institutions it was "impossible" and it would wreck all attempts at coöperation and helpfulness. He was all in favour of the voluntary system, but if the voluntary hospitals kept out of the State service they could not expect quite the same consideration as if they were in it. In the scheme, the base hospital should logically be the State hospital, because this was obliged to take any patient requiring treatment, whereas the voluntary hospitals, especially those with students, were obliged to select their cases. He did not believe, however, that it was wise to put any hospital in a primary or superior position in a district. Nor could he approve the suggestion that in public hospitals responsibility for treatment should be taken by the visiting staff. In public health hospitals at the present time there was a whole-time regular staff and consultants were only called in when necessary.

Dr. GRAHAM LITTLE pointed out that the Dawson Report had been published eight years ago when the situation of the voluntary hospitals was desperate. Now 75 per cent. of those in the provinces, and 60 per cent. of those in London, had balances at their banks. It was dangerous to give this opening to the Ministry of Health for controlling the voluntary hospitals, and it would be very regrettable if the policy of the Association were to weaken the voluntary system.

Dr. M. W. RENTON (Stratford) complained that the threshold of the voluntary hospitals was too often closed to general practitioners. There was a mistaken idea that the whole of the work should be done by consultants.—Mr. BISHOP HARMAN contrasted the views of Dr. Masterman and Dr. Little in their opposition to the scheme. It would be

impossible to please both parties.—Dr. TEMPLE GREY urged postponement. He did not like the suggestion that the central consultative council should be set up by the Ministry of Health.—Mr. H. S. SOUTTAR, however, said that if the Association's decision was to be of any value it must be sent to the Minister at once. It was surely obvious that there must be some consultative body to coördinate hospital work. The object of having base hospitals was to save waste of time and energy; they were not going to take "good" cases, but were going to set an example of what could be done, and were going to help others in every possible way. Whilst it was the duty of public hospitals to take all and sundry patients, it was the duty of voluntary hospitals to supply the highest possible level of medical service, to provide education for medical men, and so far as possible to assist the public services.

Dr. C. E. S. FLEMMING saw no reason to fear that the State would want to control voluntary hospitals. Even State aid would not necessarily mean State interference.—Sir RICHARD LUCE, M.P., said that coördination would be impossible without the intervention of some outside body, representing the interests of all concerned. Cottage hospitals, fever hospitals, and the rest would look to the base hospitals as educational centres, and they would be a very important element in post-graduate work.—Dr. FOTHERGILL was much more frightened of State hospitals than of voluntary hospitals, the majority of which in this country were staffed by general practitioners.—Dr. R. C. BUIST, speaking as a member of the Voluntary Hospitals Commission, said he had signed with a heavy heart that section of the Commission's report which dealt with financial assistance of the voluntary hospitals from mass contributions. When the poor-law hospital became municipal and lost its stigma, it would inevitably come into competition with the voluntary hospital, and if its service was adequate it would win sooner or later. People who provided treatment for themselves by paying rates would eventually drop out of contributory schemes.—Dr. A. B. MURRAY pointed out that already very few hospitals were truly voluntary; their work on venereal diseases, child welfare, ophthalmia neonatorum, and in other directions was State-aided. Whereas in big hospitals the voluntary staffs, in giving their services, were only casting bread upon the waters, practitioners who joined the staffs of small country hospitals did their work for nothing and got no indirect return. Much of this work should be paid for—a suggestion which had found no place in the memorandum.

While summing up in favour of referring back the memorandum to the Council, Dr. MASTERMAN said that in his Division there were 2400 beds belonging to public authorities, and no voluntary hospitals. Every practitioner was welcome to come in, examine, and talk over his case. He visualised, in the future, an annexe in State hospitals where practitioners could definitely undertake the treatment of their own patients.

The amendment being lost by a large majority, the meeting approved the Council's memorandum. Further discussion took place on the criteria for practitioners treating private patients in private wards or nursing homes attached to hospitals, but this question was referred for further consideration

Other Subjects Discussed.

The following motion by Edinburgh and Leith was approved without discussion:—

(1) That in the interest of the public health the British Medical Association support any measures which may be taken so to alter or amend existing legislation as to give greater power to local authorities to suppress unnecessary noise which is disturbing to the lieges; and (2) that any noise from 11 P.M. to 6 A.M. which is capable of being prevented or mitigated and which is dangerous or injurious to health, shall be a nuisance within the meaning of the Public Health Acts.

A resolution passed in 1926, saying that in accident cases treated at a voluntary hospital, where medical attendance is covered directly or indirectly by insurance, "the hospital authorities should recover from the insurance company the full cost of maintenance and treatment," was amended by deletion of the words "from the insurance company."—Buckinghamshire carried a motion asking the Council to consider whether some arrangement could be made for pay ment for the emergency services rendered by doctors to patients meeting with accidents on the roads.

In introducing the report of the Naval and Military Committee, Dr. F. W. GOODBODY, the chairman, advised that careful inquiries should be made at the present time before advising medical men to enter the Indian Medical Service.

Dr. C. L. LEIPOLDT, Secretary of the British Medical Association in South Africa, referred to the need for improving post-graduate education in England. Practitioners from the Dominions regarded themselves not as students but as the equals of any practitioner in this country. They therefore did not appreciate the instructive methods of specialists at the big teaching hospitals in this country.

At the end of the meeting a cordial vote of thanks was passed to Dr. Hawthorne for presiding, and to other officials who had worked for the comfort and convenience of the meeting.

THE ANNUAL MEETING.

At the annual meeting at the City Hall on July 24th the outgoing President, Sir Robert Philip, handed the insignia of office to his successor, Sir Ewen Maclean. The President-elect, Prof. A. H. Burgess, was introduced to the assembly. At the adjourned annual meeting, held at the New Theatre on the evening of the same day, the new President delivered the address published in our last issue. The Sir Charles Hastings Clinical Prize was awarded to Dr. Ambrose Owen, the Stewart Prize to Sir Malcolm Watson, and the Katherine Bishop Harman Prize to Dr. Ronald Hare.

THE RELIGIOUS SERVICE.

At the official church service, held at St. John's Church on July 24th, the sermon was preached by the Rev. Garfield Williams, M.B., honorary Canon of St. Albans, who spoke on the character of St. Luke. Even yet, he said, the Church had not realised the importance of what might be described as the extra-professional activities of that travelling physician of the first century. He was the greatest biographer of our Lord, so far as pure biography was concerned; he was the first and greatest of Church historians, and he was the companion and guardian of Paul the missionary. He had the practical mind of the physician, and he thought out the ways and means whereby the visions of his companion Paul might be carried out into action. One side of his character to which the preacher drew attention was his interest in persons—in personal details, at all events those which were important. That was true of the physician always. He did not treat diseases, in spite of what the public might suppose; he treated persons.

THE ANNUAL DINNER.

More than 500 people attended the annual dinner of the Association, held at the City Hall on July 26th, when Sir Ewen Maclean presided, and the guests included the Lord Mayor and Lady Mayoress of Cardiff, the Marquis and Marchioness of Bute, the Archbishop of Cardiff, Dr. Franklin Martin (director-general of the American College of Surgeons), and Sir George Syme (president of the Federal Committee of the B.M.A. in Australia).

Proposing the health of the City of Cardiff, Mr. R. G. Hogarth said that, like many other visitors, he had imagined Cardiff as a city of smoke and ugliness; he found it endowed with civic buildings unrivalled in many a European capital. It was interesting to think of all these beautiful and

concordant buildings as an expression of the coal trade, now going through a time of trouble, and he trusted that the courage which had made Cardiff great would stand by her in the present difficulties. In his response the Lord Mayor said that they were all hoping that the day would come when Cardiff would be recognised as the capital of Wales, and they had already reserved a site for the National Parliament. Meanwhile Cardiff would appeal to the medical profession because it was a city without a slum. There was not one house in it that the Ministry of Health would condemn.—Dr. H. B. Brackenbury replied to the health of the British Medical Association, proposed by Sir William Seager, and Dr. C. O. Hawthorne, giving the health of the guests, coupled the toast with the names of Sir William Diamond (chairman of the Board of Management of the Cardiff Royal Infirmary) and of Sir George Syme, both of whom responded.—Dr. W. E. Thomas wittily proposed the health of the President, Sir Ewen Maclean, who was, he said, the first ex-chairman of the Representative Body to rise to this high office.—After this health had been drunk with musical honours, and Sir Ewen had replied, the proceedings ended with the National Anthem.

THE SOCIAL SIDE.

The principal building of Cardiff is the Castle, owned by the Marquis of Bute, which comprises a large Roman fort, a Norman keep, and residential buildings belonging to nearly every English architectural period. The grounds extend for several miles towards Llandaff and the part now called Cathays Park has been made over to the city as a site for national and municipal buildings. These include the Law Courts, the County Hall, the Technical College, the Welsh National Museum, the University College of South Wales and Monmouthshire, and the City Hall. In the centre lies the National War Memorial, and the whole group of buildings, constructed in Portland stone and separated by open spaces and wide avenues, is unlike anything to be seen elsewhere in this country.

The scientific sections met at University College and in the Technical College, but most of the social functions, and the Representative meeting, were held in the City Hall. On Tuesday evening the Hall was used for a reception by the President and local executive, and on this occasion a birthday present was given by the Association to the Earl of Dumfries, Lord Bute's eldest son, who was celebrating his coming-of-age. On the following evening the Hall was again used for a reception and dance, the host this time being the Lord Mayor.

On Wednesday afternoon there was a reception at the Cardiff Royal Infirmary; on Thursday Lord and Lady Bute entertained some 6000 guests in the Castle grounds; and on Friday evening the National Museum, at an official reception, displayed its many beautiful treasures, together with a special collection illustrating the history of Welsh medicine.

On Sunday the Representative Body enjoyed an excursion to St. Donat's Castle, where a religious service was held in the courtyard. Before setting out the Representatives attended at the National War Memorial, where the President-elect laid a wreath on behalf of the Association. Many expeditions to places in the locality, including the Docks and the Bargoed Colliery, were arranged during the subsequent week.

The Popular Lecture was given at the New Theatre on Friday evening by Sir Berkeley Moynihan, who spoke on Art in Medicine, and on Friday the honorary degree of Doctor of Laws was conferred by the University of Wales on Sir Robert Philip, Dr. H. B. Brackenbury, Dr. W. W. Chipman (Professor of Obstetrics at McGill University), Sir Thomas Lewis, Dr. Franklin Martin, and Sir George Syme.

THE ANNUAL EXHIBITION.

An account of the exhibition, which was formally opened on Tuesday by Sir Ewen Maclean, will appear in a forthcoming issue of THE LANCET.

SECTION OF MEDICINE.

Sir THOMAS LEWIS, who presided at a discussion on

DISEASES OF THE CORONARY ARTERIES,

remarked that the dictum, "a man was as old as his arteries," contained a considerable element of truth, especially if it was applied to the cerebral, renal, and cardiac vessels. The coronary arteries had been the subject of discussion on several occasions in these meetings as well as elsewhere, but many problems concerning them were still wrapped in obscurity. Disease of the coronaries always interested medical men, for many notable physicians had been affected by it. John Hunter, and in modern times Sir James Mackenzie, were two out of many examples. The western counties had a peculiar interest in the condition, for the earliest and some of the most important observations on coronary vessels had originated there. 160 years ago Heberden gave the first clear description of coronary disease. Its connexion with angina pectoris was first pointed out to Edward Jenner by a surgeon living in Ross, who did a post-mortem on a case of angina and noted disease of the coronary arteries. Jenner wrote his opinion on this to Heberden in a private letter, but his views were never published, out of consideration to his friend, John Hunter. There had been great advances in recent years, in two directions especially. The first was in the study of the anatomy of the vessels of the heart and their anastomoses in heart muscle. The second was the precise study of the symptoms and signs of coronary thrombosis. This was bound to throw light on our knowledge of angina pectoris.

Dr. GEORGE A. ALLAN (Glasgow) began his opening address by defining the limits of the discussion. Speakers must beware of detracting from the value of the main subject by excursions into theories of angina pectoris. Nor must they narrow the outlook by concentrating on one aspect alone of coronary disease, such as coronary artery thrombosis. He then surveyed some of the essential features of the subject.

The association of special symptoms with occlusion of the coronary blood-supply had been recognised since 1878, but only in the last few years had a clear distinction been established between it and the more widely recognised syndrome of angina pectoris. Very important anatomical investigations had been made by Gross and his collaborators, who concluded that the heart was perhaps the richest organ in capillary and precapillary anastomoses. From the morbid anatomy point of view there were four clearly defined diseased conditions of the coronary arteries: atheroma, arterio-sclerosis, syphilis, and calcareous degenerations. These terms were often so loosely used that it was necessary to define them. Atheroma, the commonest primary lesion in the coronaries, had a patchy distribution. It was the same disease as atheroma of the aorta and had the same tendency towards ulceration and thrombosis though in a less degree. Atheroma was very irregular in its distribution in different vessels. The coronaries and other deep arteries might be affected, while the superficial arteries might give no indication of its presence. Arterio-sclerosis was a more diffuse process characterised by thickening of the media and intima. It was the same as arterio-sclerosis associated with high blood pressure and might, or might not, cause narrowing of the vessel. Syphilis, though common in the aorta, was rare in the coronaries. They were, however, liable to be occluded at their point of origin by syphilitic mesaortitis. Calcification might be superimposed on either atheroma or arterio-sclerosis, or might occur as a primary medial degeneration. The deformity it produced in association with atheroma frequently caused narrowing of the lumen with or without thrombosis.

With regard to the relative frequency of the conditions, the speaker found that out of 1000 post-mortems at the Western Infirmary, Glasgow, coronary artery disease was found in 371. Of these 238 showed

a definite lesion of the myocardium—178 presented fibrosis, 12 fibrosis and fatty change, and 48 fatty change alone. Atheroma was the most frequent lesion and caused fibrosis in 51·2 per cent. of cases. Many of the cases illustrated the remarkable adaptability of the anastomotic channels under favourable conditions. From this study, in addition to general information regarding frequency and effects of lesions, three points emerged: (1) severe coronary narrowing might be present without obvious lesion in the myocardium; (2) old-standing severe arterial lesions and actual occlusion with fibrosis might occur with no clinical history pointing to it; (3) patients might die with symptoms suggesting coronary artery occlusion and no such lesion be found. There was no diagnostic symptomatology which would cover all cases of coronary disease. When the blockage was abrupt certain features were present. Hamman divided cases into six classes: (1) sudden death; (2) death in a few hours; (3) continued myocardial insufficiency with death in weeks or months; (4) recovery after grave symptoms; (5) cases that were not grave but recognisable; (6) mild or uncertain cases. He would leave symptomatology to other speakers. The prognosis was grave, but owing to difficulties in diagnosing mild cases, the proportion of recoveries could not be stated. In treatment they must distinguish between treatment of the actual disease and treatment of a complication, such as thrombosis, arising in the course of that disease. In thrombosis the first indication was to relieve the pain. Morphine was required, often in large doses. Digitalis was sometimes of benefit. He himself had been impressed with the value of glucose in strengthening the heart, but had not been able to follow a sufficiently large series of cases to speak dogmatically. He gave half a pound daily. Treatment of actual disease of the coronary arteries resolved itself into prevention of such conditions as atheroma and arterio-sclerosis. This could not be efficient until their ætiology was better known.

Ischæmia and Infarction.

Dr. CAREY F. COOMBS (Bristol) based his remarks on cases seen as in-patients. He defined two chief coronary syndromes, ischæmia and infarction. In ischæmia there was substernal pain, excited by exertion and relieved by rest. In infarction the substernal pain was continuous. These groups were clearly defined, although it was difficult to draw a line between them, since a case of ischæmia might pass over into one of thrombosis. The age-incidence of ischæmia and infarction corresponded fairly closely but the highest peak of the curve for ischæmia occurred about a decade earlier than that for infarction. The reason for this was that ischæmia was generally due to syphilis, which caused nipping of the orifice of the coronary arteries but rarely led to infarction, whereas degenerative conditions, especially atheroma, caused destruction of the intima and infarction. With regard to sex-incidence, males preponderated to the extent of 71 per cent. in ischæmia and 82 per cent. in infarction. Most of the females in the ischæmic group had high arterial tension, but this was not so for the males. The effect of heredity could not be statistically proved, as it was difficult to get accurate family histories. The patients died at an advanced age (60–70), so that the family history had been forgotten. Nevertheless, there was a decided family incidence; several examples were quoted.

The ætiology of coronary disease was graphically shown. Rheumatism and ulcerative endocarditis seldom produced gross lesions, for although much damage to vessels was found microscopically, there was, as a rule, no interference with the blood-supply. Very interesting were the infective group of cases, of which the speaker had seen several examples occurring about the age of 40 and often associated with phlebitis. Most of the cases were of the degenerative type and arose from circumstances over which they had little or no control. With regard to treatment, he had found caffeine and diuretin of value in patients who suffered from cardiac pain on slight provocation.

Dr. IVOR J. DAVIES (Cardiff) emphasised the importance of looking for arterio-sclerosis or atheroma in clinical examination of patients. Burns, in 1809, had compared the diseased heart to a limb round which a moderately tight ligature had been tied. Ordinary work could be carried out, but further exertion produced the symptoms of intermittent claudication. Intermittent claudication was the probable cause of the pain of coronary disease. True cardiac pain did not occur in valvular disease unless decompensation was also present. The character of the pain was important. It tended to be epigastric in coronary thrombosis, hence the liability to confusion with abdominal disease. Angor animi was pathognomonic of coronary disease and emotional stress was often an exciting cause of the pain. The speaker then gave an account of the symptoms and physical signs of thrombosis, laying special stress on restlessness, especially if it occurred in a patient already suffering from heart disease.

Diagnosis and Prognosis.

Dr. A. G. GIBSON (Oxford) dealt with diagnosis and prognosis. Coronary disease should be suspected in cases of: (1) serious pain in the chest; (2) acute cardiac failure with fainting attacks; (3) acute pain in the upper abdomen with an irregular heart. It was necessary to distinguish between angina and coronary disease. In the former the pain came on during exertion and lasted for minutes, dyspnœa was absent, and the blood pressure was normal or raised. In the latter the symptoms lasted hours or days; there was vomiting, abnormal pulse-rate, low blood pressure (especially low pulse pressure), and, later, fever and leucocytosis. In some cases there was acute cardiac failure with pallor, sweating, restlessness, and entire absence of pain. Fainting attacks in persons over 40 should be regarded with grave suspicion. The blood pressure, pulse-rate, and response to exertion should be watched. The distinction between coronary thrombosis and acufe abdominal conditions might be difficult. If they occurred together it was better to operate, for the administration of an anæsthetic, although the risk was greater, did not present insuperable difficulties. Coronary disease might be suspected in chronic cardiac failure occurring in older people. But however careful they might be in diagnosis, there would be some cases impossible to identify during life. With regard to prognosis, figures did not help much until the different factors concerned in the condition could be separated. Patients who recovered from an attack of thrombosis might live many years even with extensive fibrosis of the heart muscle. Specimens of hearts from two such cases were shown.

Dr. JOHN S. CAMPBELL (Belfast) showed a series of X rays of hearts in which the coronary circulation had been injected with an opaque emulsion. Age changes were illustrated by a fœtal heart where the right and left ventricles received an equal blood-supply, the heart of a man of 50 showing decreased vascularity of the right ventricle, slightly tortuous arteries, and better developed anastomoses, and that of a man of 75 where these changes were much more marked. The next series dealt with anastomoses developing after coronary thrombosis. In one case of thrombosis of the right coronary and circumflex the whole of the arterial tree distal to the block had become filled with injection material through anastomoses with branches of the left coronary. Diagrams of variations in the areas supplied by the two coronaries were also shown.

Dr. D. EVAN BEDFORD (London) spoke of electrocardiographic changes and described the typical curves found in coronary thrombosis. Widening of the curves, splintering or notching of the waves, and low voltage were common in coronary disease. He showed electrocardiograms taken two days and four days after coronary thrombosis. Besides the above,

they were characterised by absence of the T-wave and a plateau following the R-wave in lead 2. A few weeks later there was a change. The T-wave was inverted in either lead 1 or lead 3, and was flattened in lead 2, but to a less degree. After 17 months in the case shown there was still inversion widening and notching, but the curve then began to change in the direction of the normal. Eventually normal curves were obtained. One great value of electrocardiograms was that they strengthened the physician's hand when he insisted on prolonged treatment after an attack. Patients often tried to work as soon as the acute stage had passed, and it was important to prevent this.

In the discussion which followed, Dr. BAIN said that coronary spasm had been advanced in France as the cause of cardiac pain. It was difficult to see how sclerosed arteries could go into spasm. He would like to ask, however, whether spasm could be the cause of angina without coronary disease.

Prof. T. G. MOORHEAD (Dublin) was interested in Dr. Coombs's infective group of cases in which angina was associated with phlebitis. He had published a case of thrombo-phlebitis migrans, in which phlebitis had begun in the leg, then attacked various regions of the body, and, finally, coronary thrombosis had occurred. The patient was now in good health.

Dr. A. R. GILCHRIST (Edinburgh) called attention to a group of cases in which angina was associated with paroxysmal tachycardia. He doubted whether as much could be deduced from electrocardiograms as was sometimes thought. He had one case which showed inversion of T-waves in several attacks and was diagnosed coronary thrombosis. Post mortem no occlusion of either coronary was found. The pain was probably due to paroxysms of tachycardia. Electrocardiographic records were seldom confirmed post mortem and often none had been taken before the attack.

Dr. DAVIES, in reply to Dr. Bain, said that coronary spasm was the probable cause of angina. It was doubtless the same lesion as the cerebral angiospastic attacks which caused transient hemiplegia. Alterations in cardiac rhythm were certainly due to thrombosis of the artery to the A.V. bundle.

Dr. BEDFORD said that it was dangerous to give a prognosis merely from the study of an electrocardiogram. An inverted T-wave could not be said to be of grave import, because it frequently became altered later. He considered low voltage the most serious sign. It was very difficult to obtain post-mortems on cases that had been followed electrographically and therefore there was no large series of such cases. In many of his cases, however, the diagnosis had been so confirmed.

Conclusion.

The PRESIDENT summed up the symptoms of coronary thrombosis and described the appearance of the heart in experimental lesions. With regard to prognosis, he agreed with several speakers who had said that the condition was not necessarily a very grave one where there was recovery from the initial attack. In giving a prognosis they had to consider the state of the coronary arteries. A review of the history and the condition of the patient after the event would help in this.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

AT its first session, under the chairmanship of Mr. T. WATTS EDEN, a discussion on the prevention and treatment of

UNSUCCESSFUL FORCEPS CASES

was opened by Dr. DOUGLAS MILLER (Edinburgh), who analysed a group of 558 cases delivered in Manchester, Glasgow, and Edinburgh. In 211, of whom 139 were primigravidæ, the underlying cause of dystocia was *disproportion*, due for the most part to pelvic contraction, and in a few to an abnormally large child. The flat rachitic type of pelvis was exceptionally common in Glasgow. In 14 deformity of the outlet and in 6 a contraction ring provided an additional obstacle. Disproportion varied widely in degree; sometimes it had been difficult to remove the head even when crushed, sometimes labour would have been normal if forceps had been withheld. In 161 patients the cause of difficulty had been a *posterior position of the occiput*, for the most part unrecognised. This fact emphasised the urgent necessity of accurate orientation of the head, for which purpose the ear was a more reliable guide than sutures or fontanelles. In most of these occipito-posterior cases the head had been deeply engaged, with the occiput either in the hollow of the sacrum or still obliquely posterior. In the large number, however, in which the head was still high or movable at the pelvic brim, the soft parts had been severely bruised and lacerated by slipping forceps. In several cases the cervix had been only partially dilated, and was badly torn; sometimes the tear involved the lower uterine segment.

In a third group of 151 cases *no abnormality* had been present. Some of these might have been occipito-posterior before their transit to hospital, but in a large number anxiety to relieve suffering had obviously made the practitioner apply forceps before dilatation and head-moulding had sufficiently advanced. The fourth group consisted of 12 face cases.

Treatment.

Where disproportion was the cause, treatment depended on its degree, the condition of the child, and whether an adequate test of labour had been made; 78 patients of the 211 had been delivered spontaneously or by low forceps. Craniotomy had been employed in 98 cases and Cæsarean section only in 12; 21 of the 29 maternal deaths had been due to puerperal sepsis. Of the 161 cases due to occipito-posterior position the majority were advanced in the second stage with the head arrested on the pelvic floor, and an attempt had usually been made to rotate manually and complete delivery with forceps. When impaction had prevented rotation, craniotomy had usually been performed. In two-thirds of the instances in which the head had been arrested at the inlet of the pelvis, or the upper part of the cavity, manual rotation of the head had been combined with external rotation of the body. Where the os had been found fully dilated, forceps had been immediately put on and delivery completed; when the cervix had not been completely effaced, labour had been allowed to proceed. Internal version, performed as a last resort in 11 of these cases, had saved three of the children.

In most of the 151 cases in which premature application had been the only cause of failure, the patient had been placed under morphine or twilight sleep and delivered spontaneously or by low forceps. When the child had been dead or dying, craniotomy had been performed.

The total maternal mortality had been 54, or 10 per cent.; of these the cause had been sepsis in 37, uterine rupture 8, post-partum hæmorrhage and shock 6, and pneumonia 3. In 132, or 23·6 per cent., the puerperium had been morbid by the B.M.A. standard; 357 children, or 64 per cent., had been lost. Many of the patients had only left hospital after exhausting weeks of fever, and many had had to undergo further weeks or months of ill-health from laceration of the cervix, vagina, or pelvic floor. End-results in 98 patients who had been followed up had been 24 complete recoveries and 74 residual disabilities of varying degree, the most frequent being laceration of the cervix, usually due to application of forceps before dilatation. Backward displacement of the uterus, usually associated with subinvolution, downward displacement, and pelvic infection was common. Pelvic infection occurred in one-third of the cases; 24 patients had had to undergo operation for their resulting disabilities.

Unsuccessful forceps cases resulted largely from the breach of three rules: forceps should never be applied

(1) when marked disparity existed between head and pelvis, hardly ever when the head was still movable above the pelvic brim; (2) without an exact knowledge of the position of the head; (3) until the cervix was completely effaced and retracted over the presenting part. It would be a counsel of perfection to forbid the application of forceps except on strict indications, but greater care and discretion in their use was a reasonable ideal.

The Importance of Antenatal Care.

Prof. JAMES HENDRY (Glasgow) pointed out that public interest in puerperal morbidity was thoroughly aroused, and that there was no doubt whatever that the doctor was held responsible. Dr. Miller had provided the records; he himself would attempt to consider to what extent more efficient antenatal care would have prevented these accidents.

In most of the cases of disproportion, contracted pelvis and not an abnormally large child had been the cause. This could nearly always have been identified in early pregnancy; skeletal irregularity was an important danger-signal. Internal examination was essential, and the form of the pelvic outlet should be noted; a sharp subpubic angle with reduced distance between the tuberosities indicated contraction at the outlet and might pass unnoticed until late in labour. Examination of the diagonal conjugate diameter should always be attempted. It might be difficult in the early months, but was usually possible during the seventh or eighth, especially if the patient "bore down," relaxing the perineal muscles. Short fingers were not really a handicap. The fingers should also sweep round the pelvic brim to detect asymmetrical deformity, a small transverse diameter, or ovarian cysts or fibromyomata. Towards the end of the pregnancy a pendulous abdomen in a primigravida should arouse suspicion. If the head failed to descend into the pelvic cavity during the last month the cause might be faulty presentation, neoplasm, or even placenta prævia, but was often contracted pelvis. The history of previous labours was most valuable. X rays were not of much help, except possibly in the generally contracted pelvis, when Prof. Martin's method was of value.[1] At this stage the fœtal head was the best of all pelvimeters. The method of election, that of Müller, should be performed under an anæsthetic during the last month. In contracted pelvis, however, the position of the head would not indicate how it would mould or alter its position in labour, and Munro Kerr's method of pelvimetry gave a far more reliable prognosis. In labour, if forceps were decided on, a most careful re-examination should be made, if necessary with the hand in the vagina, after the patient had been anæsthetised, and if great difficulty were then apparent the use of forceps should be foregone. Rectal examination was safer than vaginal examination, and just as satisfactory. In borderline cases, if progress were not satisfacory after a good long labour, the lower segment Cæsarean section should be performed.

Occipito-posterior presentations were usually identifiable by careful antenatal examination. Where palpation was difficult two X ray photographs, frontal and lateral, should give a complete diagnosis. Dr. Haultain had secured permanent correction by pads and a binder in 87 per cent. of primigravidæ, and 83 per cent. of multiparæ.[2] 60 per cent. rotated spontaneously, but it was important to recognise the association of this condition with protracted labour. It was often accompanied also by slow dilatation of the cervix. Other abnormal presentations, or the deformities which would cause them, were practically all identifiable before labour. Hydrocephalus was easily detected, except when obscured by hydramnios, and perforation might prevent an exhausting labour. Manual dilatation of the cervix was seldom justified, and, even when attempted, was hardly ever complete.

[1] Zeitschr. f. Geburtsh. und Gynäkol., 1927, xci., 3, p. 504.
[2] Proc. Edin. Obstet. Soc., 1926, p. 133.

Antenatal examination of this kind could often be carried out by the general practitioner, but there was need for efficient consulting centres. The work was far too responsible and difficult for midwives, and no midwife should be authorised to undertake the care of a pregnant woman unless provision were made for careful examination by a medical practitioner before labour were due.

Prof. W. FLETCHER SHAW remarked on the large number of craniotomies in the series compared with Cæsarean sections, in spite of the increased use of the section by every obstetrical unit. Performed upon a "clean" patient its mortality was very low, but after attempts at forceps delivery it was highly dangerous. Many patients were badly lacerated, and others were shocked; some were definitely infected, and in some cases the child was dead or damaged. Pubiotomy had never become popular, and was only useful when a small amount of widening would make the difference between retention and expulsion. Miscalculation of the amount led to severe laceration.

The main reasons for failure in forceps delivery were professional and lay apathy. Obstetrical teaching was relegated to a subordinate position, and the public did not realise how difficult maternity cases were. Remuneration was poor, and the relatives looked down upon a doctor who called in expert assistance. It was necessary to educate the public and to provide more and sounder clinical teaching. Stress should be laid on four points: antenatal care, asepsis (Prof. Shaw condemned coal-tar derivatives), resistance to the relatives' importunity in the first stage of labour, and definite diagnosis before applying high forceps.

Discussion.

Dr. CHARLES DOUGLAS (St. Andrews) appealed to general practitioners to shoulder the responsibilities of antenatal work, and warmly recommended version as an effective stand-by when hospitals were far off, with the stringent proviso that the os should be fully dilated. Chloral was very valuable in securing dilatation. Even after forceps had failed, version would often safeguard future maternal efficiency.

Prof. BETHEL SOLOMONS (Master of the Rotunda Hospital, Dublin) put most unsuccessful forceps cases down either to abysmal ignorance or to wilful negligence. The first could be removed by training, especially on the management of the all-important first stage; the second should be punished by legal process. Failed cases should be distinguished from cases where forceps had been used tentatively with a view to later pubiotomy or lower segment Cæsarean section. The present curriculum was too short, and an extra year should be allotted to the post-graduate study of obstetrics. He deprecated Dr. Miller's classification of "children dead or dying on admission." It was impossible to tell whether a child was dying, and the impression that it was possible would lead to a far too free use of the cephalotribe. The man who had strength of mind to avoid forceps when contra-indicated, and strength of arm to deliver the head when they were indicated, would have no failed cases. In the Rotunda there had only been 10 in 6000 or 7000 deliveries.

Dr. MABEL RAMSAY (Plymouth) viewed craniotomy with horror, and recommended section, even after forceps had failed. Antenatal schemes broke down because the patient would not realise their value; moreover, the officers in charge were often inadequately trained.

Dr. F. EDGE (Birmingham) saw a solution in compulsory antenatal consultations with adequate remuneration.

Mr. L. C. RIVETT (London) urged four conditions for applying forceps: engagement of the head, full dilatation, passage of the greater diameter through the cervix, and an empty bladder. Neither version nor craniotomy should be performed when the liquor amnii had drained away and the uterus was in an

irritated condition; Cæsarean section was then much safer. A six months' course in obstetrics was the very minimum.

Dr. R. KELSON FORD (Preston) asked for expert opinion on instrumental version and the use of Kellan's forceps. In the municipal maternity home of which he had charge he had no difficulty in getting paying patients to attend for antenatal, but only about one in three came for postnatal examination. Antenatal inspection should be performed not later than the thirty-sixth week. The Association should insist that, in any future State-run maternity hospital, the private practitioner should be able to attend his own patients.

The Secretary, Mr. B. K. TENISON COLLINS (Cardiff), said that certain midwives recommended doctors for the rapidity of their deliveries, regardless of the result; practitioners were thus forced to use forceps against their better judgment. The remedy was an educative campaign.

Dr. KENNETH WILSON (Blandford) described a case of hydrocephalus, and one in which multiple fibromata had nearly caused a failed forceps case.

Dr. H. R. PARAMORE (Rugby) advocated pubiotomy, which he claimed was easy and gave good results, although the hæmorrhage and laceration it caused were somewhat alarming.

Dr. J. BOYD (Manchester) objected to Prof. Solomon's strictures on the ignorance and negligence of practitioners, and said that if the Master of the Rotunda had to work under the conditions of some general practitioners his results would compare unfavourably with theirs.

Dr. J. S. QUIN (Dublin) pointed out that a Master had to undergo a severe apprenticeship in some of the worst slums in the world. Students were not taught enough about normal labour, and when they might refrain from interfering. A quarter of a grain of morphia at the onset of labour might result in a good many births before arrival, but it saved much anxiety and, if always given, would wipe out failed forceps cases. If lysol were abolished a large number of deaths from sepsis would be avoided.

Replies.

Dr. MILLER, in reply to Prof. Solomons, said that by "dying" children were meant those in which fractures of the skull could be palpated. In some cases, moreover, when neither pubiotomy nor Cæsarean section were available, the claims of mother and child had to be balanced, and the mother's were, in his opinion, the weightier.

Prof. HENDRY said that proper care of the first stage should exclude contact with relatives. He had not had much experience of "tentative" forceps; in the cases that came to him the forceps had generally been used "all out." When it was necessary to intervene after the uterus had become dry and irritated, he first allowed the patient a considerable time to recover from shock and gave morphia; intervention should only be done with a deep anæsthetic. Instrumental rotation was very dangerous in the primigravida, whose vaginal walls had not been dilated before. His limited experience of Kellan forceps had not been encouraging.

Prof. SHAW, in reply, agreed in condemning coal-tar antiseptics. He recounted the system by which a north country practitioner charged a composition fee, performed careful antenatal examination, and employed capable midwives to attend all normal confinements for him. He himself administered after-care, but only attended confinements when conditions were abnormal. He took full responsibility, but by eliminating sources of complication at the outset saved endless trouble and compulsion by relatives. The development of this method meant training the public rather than the profession.

SECTION OF PATHOLOGY AND BACTERIOLOGY.

UNDER the presidency of Prof. E. H. KETTLE (London) a discussion on the

PATHOLOGY OF ENCEPHALOMYELITIS IN VIRUS DISEASES AND EXANTHEMATA

was opened by Prof. H. M. TURNBULL (London), who dealt principally with post-vaccinal encephalitis. In order to discover the exact cause of this condition, several questions, he said, required an answer. Is the encephalitis caused by the essential virus of vaccination lymph, or by some other infection introduced at vaccination, or, does the vaccinal virus excite some latent infection? Further, if an agent other than the vaccinal virus is the cause, are the histological results due to a combined action with vaccinal virus? Comparative histology was the speaker's chief method of dealing with these questions. In the cases of post-vaccinal encephalitis which he had studied himself, and in the cases described by others, he had found a remarkable similarity in histological appearances. To the naked eye the brains from most of these cases showed congestion and œdema with hæmorrhage into the leptomeninges and subdural space. The spinal cords contained one or two punctiform hæmorrhages and in some cases there was blurring of the line of demarcation between grey and white matter. In seven out of eight of the speaker's own cases there were found on microscopical examination focal changes extending from the cerebral cortex to the lumbo-sacral cord, with maximal lesions in the latter situation. In the eighth case affection of the spinal cord was greatest in the thoracic segments. Perdrau had found the most severe lesions in the pons and upper medulla, while the maximal cord lesions were in the lower thoracic segments and lumbo-sacral enlargement. Schürmann in the pons and medulla, and Lucksch in the pons and substantia nigra. Schürmann also found a fairly severe affection of the optic tracts and nerves. The speaker had found the white matter of the cerebrum more affected than the grey, but in the central nervous system as a whole the grey matter was more affected than the white. Other describers had made similar findings. Acute and subacute types were described. In the acute type there is infiltration of the meninges with various round cells and endothelial cells chiefly round the veins. The vessels are engorged and occasional hæmorrhages occur. In the brain and cord substance there are also small hæmorrhages with congestion, but the essential change consists of perivascular and marginal zones of demyelination. The perivascular zones form wide "sleeves" which surround the vessels for long distances. Such vessels are almost always veins. The marginal zones are found most frequently along the edges of the ventral fissure of the spinal cord but also occur elsewhere at the periphery of the cord. Schürmann found them also in several situations in the cerebrum. Under low magnification the zones appear sharply defined, and within such zones, except at the margins, demyelination is usually complete. Only a fraction of the axis cylinders survive. The glial fibres immediately around the vessel are sometimes thickened and give a positive reaction for fibrin. Further from the vessel the fibrils form a wide-meshed net and frequently appear diminished in number. The changes in the marginal zones are similar, but the speaker had not seen fibrinoid thickening of the perivascular glial fibres in these situations. Perdrau had found incipient demyelination free from glial cells around many vessels, but in conspicuously affected zones the net of glial fibres usually contained a great number of proliferated glial cells. The bulk of the cells present have been shown to be microglia and to contain myelin and fat. In addition, however, neutrophil leucocytes occur when inflammation is intense. Proliferated glial cells extend beyond the demyelinated zones and cause a diffuse infiltration in those regions which are most severely affected. Infiltration of the

adventitial sheaths is an infrequent and inconspicuous feature. In addition to the perivascular and marginal lesions, Perdrau found isolated and degenerated fibres throughout the nervous system. The bodies of the neurons are remarkably well preserved. There is often clumping of the neurochromatin, but loss of angularity and complete necrosis are rare. In the subacute type the adventitial sheaths are distended with large fat-granule cells. The perivascular zones of demyelination may be scanty and narrow in some cases, whilst in others they may coalesce to form large areas. Prof. Turnbull maintained that the changes described are clearly distinct from those of poliomyelitis and encephalitis lethargica, and belong to the group of conditions characterised by demyelination.

This group includes certain examples of the disseminated myelitis of Westphal, disseminated encephalomyelitis of later writers, disseminated sclerosis, and encephalitis periaxialis diffusa. The speaker added that a condition similar to post-vaccinal encephalitis occurs independently of recent vaccination and observed exanthemata. He cited several examples described by various authorities. Similar histological changes had been found in the central nervous system as a complication of exanthemata. Some of the cases occurring in measles, though essentially similar, present certain differences. There could be little doubt that similar changes occur in small-pox and probably after antirabic treatment, but occurrence in mumps and chicken-pox was uncertain. The cardinal point of difference between these changes and those of acute disseminated sclerosis is that the whole length of a vessel is surrounded by demyelination in the former and only a segment in the latter. The pathogenic processes in the two conditions, however, are essentially similar and the different pictures may simply represent modified reactions to a single agent. Regarding nomenclature, in order to avoid confusion with other varieties of encephalitis, the speaker suggested, in his concluding remarks, that the term "disseminated myelitis of the post-vaccinal type" should be applied to the conditions he had described, thus grouping together conditions having a similar histological appearance.

Prof. J. McINTOSH (London) declared that the non-purulent variety of encephalomyelitis is usually the result of virus infection. He then dealt in sequence with the manifestations of this condition in various diseases. In poliomyelitis the incidence of encephalitis is low, but fatal cases often present slight cerebral lesions with scattered areas of perivascular infiltration. When the disease is produced in monkeys, the maximal lesions are in the cord no matter how the infection is made. In encephalitis lethargica the main pathological lesion is in the basal ganglia of the brain. There is perivascular infiltration, chiefly of lymphocytes and plasma-cells. There is also infiltration of the perivascular parenchyma and glial proliferation. The nerve-cells are not usually affected. The diseases, he declared, could be transmitted to monkeys, the lesions occurring showing great similarity to the natural infection in man. Some experimenters had declared that the lesions obtained were due to spontaneous encephalitis, but Prof. McIntosh maintained that the lesions he had obtained were similar to those in man, and quite different from the lesions of spontaneous encephalitis in animals. He next drew attention to affection of the nervous system in small-pox. He described in some detail the appearances presented by the brain of a child who developed cerebral symptoms after a mild attack of small-pox. Histologically the lesions proved to be very similar to those of post-vaccinal encephalitis, the features of which had been dealt with by Prof. Turnbull. The incidence of encephalitis following vaccination was now generally admitted, continued the speaker, the condition manifesting itself 10 to 14 days after vaccination. Dealing with the ætiology of post-vaccinal encephalitis, Prof. McIntosh summarised the histological findings in this condition and maintained that they constituted a new pathological entity, in which the lesions are distinct from those in poliomyelitis and encephalitis lethargica. In order to prove that the vaccinal virus is responsible for the condition, it is essential that lesions of a closely similar nature should be produced by animal inoculation. Material from the central nervous system of cases of vaccinal encephalitis when injected intracerebrally produced only little disturbance. These negative results, it was considered, demonstrated the absence of the virus of encephalitis lethargica and poliomyelitis. Using vaccinal virus itself for inoculation, intracerebral injection into rabbits produced a fatal encephalitis, but there was great difficulty in carrying out a sequence of inoculations from one animal to another with positive results. Levaditi had prepared a highly virulent strain called neuro-vaccine which could be successfully carried from one animal to another. A similar strain had been prepared by Prof. McIntosh. The brains of animals thus treated showed definite encephalitis, extensive meningeal lesions, and sometimes indications of perivascular demyelination. Further, intravenous injections of these virulent strains of vaccinal virus produced changes in the internal organs similar to those occurring in fatal cases of post-vaccinal encephalitis. These lesions are focal areas, whitish in colour, and about the size of miliary tubercles. They differ from tubercles in showing more evidence of fibrosis. No tubercle bacilli could be demonstrated in the lesions and they were regarded as granulomata resulting from multiple foci of some virus. From these experiments it has been concluded that the vaccinal virus is the cause of post-vaccinal encephalitis. Encephalitis, continued the speaker, has been recorded in cases of chicken-pox, measles, and mumps, but such a complication is extremely rare. In the case of chicken-pox, clinical records show that symptoms suggesting involvement of the nervous system occur from time to time, and in the literature some dozen cases of encephalomyelitis have been described. Recovery in most cases was complete in a few weeks. Fatal cases of chicken-pox are so rare that no histological details are available. Nervous involvement in measles and mumps is still more rare. Two cases of encephalitis complicating measles have been described by Wohlwell, who regarded them as showing a close resemblance to the lesions of post-vaccinal encephalitis. Encephalitis in typhus fever is a constant feature and may be regarded as part of the disease process. Microscopic examination reveals the constant presence of lesions of the central nervous system and internal organs. In general the encephalitic lesions resemble those of variolar and post-vaccinal encephalitis. The pathological changes consist essentially of proliferations of large clear cells into the surrounding nervous tissue, with infiltration of inflammatory cells. In some lesions the cells are compact, while in others the perivascular outgrowth is diffuse. The proliferated cells are generally considered to be glial in origin, but Wollbach and his co-workers are of the opinion that they are mesoblastic and derived mainly from the blood-vessels. As a rule, gross lesions are not visible to the naked eye, and the meninges show only a slight inflammatory reaction. Typhus has been experimentally transmitted to monkeys by intraperitoneal injections of blood from infected cases, and to guinea-pigs by injection of pathological tissue and lice from human cases. The virus can be carried from guinea-pig to guinea-pig indefinitely. Lesions identical with those in man were found in the central nervous system of these animals. Prof. McIntosh, in summarising, said, non-suppurative myelitis can occur in a number of virus infections, in particular poliomyelitis, encephalitis lethargica, small-pox, vaccinia, chicken-pox, measles, mumps, and typhus fever. He stated that the encephalitis may occur as part of the disease process or as a complication, and investigations of these conditions show that a histological picture of a certain type can be assigned to each. Doubtless, he said, further studies will bring forward additional new types, as the differential features are better understood. The characteristic histological appear-

ances of encephalitis lethargica and post-vaccinal encephalitis, together with the fact that lesions comparable with those found in natural disease can be reproduced experimentally in animals by the inoculation of virus containing material, is strong evidence that the encephalitis is actually produced by the infecting virus in each of these two conditions.

Dr. J. G. GREENFIELD'S paper was read in his absence by Prof. HADFIELD. He dealt with encephalomyelitis in measles and pointed out that this complication appeared to be increasing in recent years. He described in some detail the post-mortem findings in a girl of 9 years in whom there developed convulsions, high temperature, and coma four days after the measles rash had appeared. The similarity of the findings to those in post-vaccinal encephalitis were demonstrated.

Dr. S. P. BEDSON considered some aspects of the experimental side of the problem. He pointed out that the virus of herpes febrilis should be carefully considered in dealing with nervous manifestations in virus diseases. This virus has been considered by some authorities to be the causal factor in encephalitis lethargica, such view being based on the isolation of the virus of herpes febrilis from such cases. In encephalitis lethargica, however, no skin lesions occur. Dr. Bedson claimed that an antibody is developed in herpes infection, but he could find no such antibody in encephalitis lethargica. The herpes virus is highly neurotoxic in rabbits, and further, spontaneous encephalitis also occurs in these animals. Great care is therefore necessary in interpreting results.

Prof. G. HADFIELD (London) described the appearances in a case of post-vaccinal encephalitis. He had also studied in detail the nervous system of four children who had died from accidental causes shortly after vaccination. In these cases no changes were found. The histological picture in the encephalitis case corresponds with that of other workers. The importance of investigating the condition and reaction of the neuroglia was emphasised. The histological picture in post-vaccinal encephalitis seems to be standard but not specific because of similarity in measles and small-pox. In early lesions of disseminated sclerosis there is histological similarity to the above lesions, but the clinical features suggest a different ætiology.

Prof. J. H. DIBLE (Cardiff) expressed considerable doubt on the interpretations of experimental work in encephalitis lethargica. He said that in the rabbit the positive results obtained were inextricably mixed up with the herpetic virus. If herpes and encephalitis virus are the same thing then it exhibits different properties in human and rabbit brains. It is impossible to produce keratitis with fresh material from encephalitis cases, but when encephalitis has been produced in rabbits the virus recovered from the brain will produce keratitis. Clinically, encephalitis rarely or never presents herpes. Herpes is common in pneumonia, but cerebral affection is absent or rare in this condition. Prof. Dible, Flexner, and others had failed to infect rabbits with encephalitis lethargica. Flexner had also failed to infect monkeys. Those who have produced apparently positive results show marked disparity in the time of incidence, and it is difficult to believe that one and the same virus could exhibit such eccentricities. The speaker expressed doubt that the condition of encephalitis lethargica has ever been transmitted to animals.

Prof. J. CRUICKSHANK (Aberdeen) drew attention to the incidence of herpes infection in bacterial diseases, and sought information on the incidence of encephalitis in such cases. He further described an interesting happening in which a stock of calf lymph which was used without ill-effects in Spain, when used in Holland produced a number of cases of post-vaccinal encephalitis. Was this the result of a dormant virus being stimulated?

Prof. MCINTOSH, in reply, said he was quite satisfied that the lesions he had obtained were not those of herpes febrilis or spontaneous encephalitis.

The PRESIDENT summed up the discussion which, he said, had brought out clearly the fact that a form of encephalitis was definitely associated with vaccination. Whether the vaccine was the actual cause of the encephalitis or whether it served merely to light up an already existing latent infection was not important from the practical standpoint. If one man assaulted another with a fatal result, the fact that the victim might not have died had he not suffered from heart disease would not save the assailant from punishment. Similarly, vaccination could not be held blameless even if it only lighted up a latent infection. The existence of cases of encephalitis following vaccination was now established, but official figures as to the proportion these cases bore to the total number of vaccinations performed were not available. Since allusions to the complication had frequently appeared in the lay press, he had hoped that the discussion would have brought out some information on this point, so that the medical profession would be in a position to reassure the public.

An interesting exhibition of pathological specimens was on view at University College throughout the Association's meeting.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some 1927 statistics of five Lancashire districts:—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Blackburn C.B. (124,500)	13·7	14·9	0·88	1·28	4·0	2·2	77/37	7·0	7·6
Bolton C.B. .. (178,300)	15·1	13·8	1·04	1·32	3·2	1·9	75/36	7·4	4·4
Bury C.B. .. (56,770)	13·7	14·3	1·02	1·35	3·8	2·3	79/35	5·1	3·8
Eccles B. .. .. (45,390)	15·6	12·7	1·06	1·65	2·3	2·2	61/24	4·2	2·8
Swinton and Pendlebury U.D. .. .. (34,750)	12·2	10·0	0·86	1·14	2·0	1·4	75/40	2·3	4·7

C.B. = County Borough. B. = Borough.
U.D. = Urban District.

Blackburn.

Dr. Oscar M. Holden reports a sunless year with an abnormal rainfall—958 hours of bright sunshine recorded at the corporation hospital as compared with 1114 in 1926, and 43·3 in. of rain as compared with 40·9 in. Dr. Holden thinks the extent of the clay drifts has some bearing on the prevalence of the rheumatic affections, which are a prominent feature in the sickness records. The year was one of depressed industrial conditions with much unemployment in the town's chief industry of cotton weaving and its subsidiary branches. The population of Blackburn reached its zenith in 1914, and in 1927, for the first time since the war, the deaths exceeded the births—namely, by 162.

The respiratory group of diseases bulks most largely in the death returns of the town, and the predominant causes suggested are unfavourable climatic conditions coupled with a dirty atmosphere. Deaths due to respiratory diseases are markedly

greater among cotton operatives than among the general population at all age-periods. The tuberculosis death-rate shows very little change. Only a very small proportion of the contacts avail themselves of the facilities afforded by the tuberculosis dispensary. It is not practicable with the present staff to arrange for home examination of contacts, but the coöperation of private practitioners would be very valuable in this branch of work. There is great need for adequate after-care for cases of pulmonary tuberculosis.

The antenatal clinic was attended by 480 prospective mothers, the total births being 1702. Dr. Holden is disappointed with the number of patients sent to the clinic by the midwives, who attended 82·4 per cent. of the confinements during 1927. He further points out that no improvement has been brought about by the recent requirement of the C.M.B. that practising midwives should carry out antenatal work or (if they feel unable to do so) send their patients to the antenatal clinic. In 1925 7·5 per cent. of the cases attending the clinic were sent by midwives, in 1926 12·3 per cent., and in 1927 12 per cent. The maternal mortality is high, the figures for the last six years being 6·8, 6·7, 5·0, 5·7, 8·0, and 7·6. The stillbirth-rate for 1927 was 5 per cent. The Springfield Maternity Home has accommodation for 20 cases and is recognised as a training hospital for pupil midwives. The medical officer of health has power to remit the minimum fee of 1½ guineas per week in cases of proved necessity, and there is no reason why any mother, whose home surroundings are unsatisfactory, should not avail herself of the facilities and comforts of the home. Nevertheless the home is not used as much as it might be. There were only 220 cases admitted during 1927, of whom six were for antenatal supervision. From 400 to 500 cases could be readily accommodated.

The death-rate from respiratory diseases among the pre-school children was especially high owing to outbreaks of measles and influenza during the first quarter. Although there has been a distinct fall in the infant mortality-rate since 1920, the death-rate in the 1–5 years group shows no such tendency. Blackburn is more fortunate than most industrial towns in its housing conditions. There is no real slum property and no universal overcrowding, the average rooms per person being 1·1. And yet there is a long list of applications for corporation houses, occasional overcrowding caused by subletting, and a growing tendency for tent sheds and caravans to be used as substitutes for houses.

Bolton.

Dr. C. W. Paget Moffatt reports that for the first time since 1922 the Registrar-General has estimated an increase in the population of Bolton, which makes it nearly as high as it was in 1909—viz., 178,667. The scheme for the substitution of water-closets for privy middens has slowed down owing to difficulties as to sewers and prospective demolition of property.

Bolton is coöperating with the Manchester regional smoke-abatement committee. The intention is to have the same by-laws in all the areas of the region, but up to now the regional committee has not been able to formulate by-laws acceptable to the Ministry. There are 226 factory chimneys in Bolton, and Dr. Moffatt thinks there will be no real abatement of the smoke nuisance in industrial areas until soft coal is replaced by smokeless fuel, and that a great deal will be accomplished in this direction before long. By-laws are needed for houses let in lodgings. Strenuous efforts are being made to reduce the nuisance from vans. At the close of 1927 there were 42 living vans as compared with 73 at the close of 1926. Most of the slaughtering in Bolton is done in private slaughter-houses owing to the fact that the public abattoirs are too small and out of date. The new houses erected were 510 municipal, 490 subsidised houses by other persons, and 81 unsubsidised, a total of 1081. Overcrowding is not prevalent and the number of inhabitants per house has decreased steadily from 4·64 at the census of 1901 to 3·86 in 1927. Forty-seven houses were demolished during the year.

The meat regulations have brought about a marked improvement in the handling of meat, but attention is drawn to the very insanitary practice of leaving the feet on the dressed carcasses of lamb and mutton. The frequently filthy condition of the feet is liable to cause dangerous contamination of the meat.

About three-fifths of Bolton's milk comes from 2700 cows stalled in the borough; one-fifth from outside farms is pasteurised by the Coöperative Society; and the remaining fifth comes from other outside farms. The "inside" cows are regularly inspected by the veterinary surgeon, who is usually accompanied by a sanitary inspector to look after the hygienic condition of the dairy farm. As the result of routine veterinary inspection, 6 cows giving tuberculous milk were found and slaughtered. The cows slaughtered under the Tuberculosis Order numbered 32, of which 9 had tuberculosis of the udder, 1 was giving tuberculous milk and had other tuberculous lesions, 6 showed tuberculous emaciation, and 16 had chronic cough and definite signs. One farmer was fined £5 for failing to notify a cow suffering from tuberculosis of the udder.

Dr. Moffatt shows that Bolton is doing everything recommended by the Ministry for the prevention of maternal deaths, but expresses his opinion that a real improvement in the training and status of midwives is needed. A longer and more thorough training would help to exclude from the profession those who adopt it, not as their real life's work, but as a means of adding to the family income.

Bury.

Dr. G. Granville Buckley says that the scheme for the conversion of privies into water-closets has made rapid progress, but that there are about 450 which cannot be dealt with as there is no sewer available. The sewage disposal works have three systems following the sedimentation tanks—namely, single-contact beds, percolating beds, and the activated sludge process. During 1927 six samples of the joint effluent were satisfactory and two slightly unsatisfactory, as judged by the inspectors of the Mersey and Irwell Joint Committee. The public abattoir is modern in every respect. Of the carcasses, bulls were affected with tuberculosis to the extent of 2·5 per cent.; oxen, 0·21 per cent.; cows, 10·25 per cent.; heifers, 0·55 per cent.; and pigs, 4·22 per cent. The infant deaths numbered 62, and there were 34 deaths of children between the ages of 1–5. Of the three deaths making up the maternal mortality one was due to puerperal fever, another to "septic abortion followed by peritonitis and septicæmia set up by douching in an attempt to procure abortion," and the third to "septic abortion following on accidental abortion. Peritonitis (general)." There was a fourth maternal death of a woman, who had attended the antenatal clinic and who developed kidney trouble the tenth day after labour.

Eccles.

Dr. J. E. Spence points out that there were no deaths of children aged 1 to 2 years from gastro-enteritis in 1927, but that 13·3 per cent. of the deaths at this age-period since 1914 have been due to this cause. The fall in mortality at the age-period 2 to 5 has not been regular, but shows fluctuations caused by the respiratory diseases. Since 1914 28·1 per cent. of the deaths in this age-group have been due to bronchitis and pneumonia, 15·9 per cent. to measles, and 8·4 per cent. to whooping-cough. The child welfare work and school medical work is closely coördinated. Each health nurse attends the centre on one afternoon a week and, as far as possible, the mothers in her area come on that afternoon. Each child during its first year is seen by the nurse on

an average 29 times, during the second year 8·9 times, and during the third year 4·8 times. The supervision continues during the 3–5 age-period, when about half the children attend school. Early treatment of the pre-school child for squint, dental trouble, and other ailments is thus made possible. "Ultra-violet" treatment is provided at Barton-upon-Irwell Hospital for rickets and debilitating conditions, but Dr. Spence is not greatly impressed with its value, if separated from other hygienic measures. There is a difficulty in getting the "lazy, indolent mother" to persevere with any treatment for rickets, as she trusts to the deformities disappearing without treatment and does not appreciate that the deformity is only one effect of the disease. The water from the two swimming baths is filtered through Bell's filters. The men's bath was closed for repairs after the water had been in use from January, 1923, until Oct. 31st, 1927. During the whole of this period the chemical and bacteriological examination of this water was satisfactory. The women's bath is chlorinated as well as filtered, but the analysis taken on Sept. 20th shows more chlorine in the water of the men's bath than in that of the women's. Notwithstanding the extensive provision of municipal houses, there are too many houses occupied by more than one family, and many cases of hardship therefrom. The rent charged to the lodging family in many instances exceeds the rent of the whole house. During the year 19 municipal houses, 34 subsidiary houses, and 3 houses of a larger type were erected, while 24 houses were demolished. Ninety municipal houses are nearing completion, and the corporation are considering a scheme for 68 more. There are 800 families which still require to be housed and there are no signs of the shortage of houses being overtaken.

Swinton and Pendlebury.

Dr. H. C. Mulholland, who is also school medical officer and certifying factory surgeon to the urban district, says the staff engaged upon orthopædic, dental, and aural work for the schools does similar work for the maternity and child-welfare centres. The district, except in a few outlying cases, is on the water-carriage system. The sanitary inspectors have been sent for a course of special training in dairying. A table shows that out of 52 routine samples of mixed milk, tested by biological methods, nine contained tubercle bacilli. Systematic veterinary inspection of the farms has been in force since 1924, and the veterinary surgeon is accompanied by the sanitary inspector, who sees to the sanitary condition of the dairy farms. The council has adopted the limit of 2 minutes in the half hour for black smoke, and legal proceedings were successfully taken and fines inflicted during the year in three instances. Since 1920, 32 cases of encephalitis lethargica have been notified, including one doubtful case in 1927. The present condition is that 8 have died, 17 are severely ill, 4 are slightly ill and fit for light work, and 3 are apparently normal. There was no evidence that case-to-case infection, insanitation, or overcrowding were causal factors. The health visitors have undergone a short course of training at the Manchester Royal Eye Hospital on the nursing of ophthalmia neonatorum. The four cases notified in 1927 all made a complete recovery. One urinary typhoid carrier resident in the district is kept under observation, but did not give rise to any cases in 1927. There were 709 births, and 81 expectant mothers attended the antenatal clinic, which is conducted by a consultant. Caravans tend to increase in the district, and the occupants are usually dependent upon neighbours for water and sanitary conveniences. There are just over 5000 working-class houses in the district, and 309 of these houses are overcrowded. Houses needed are estimated at 510, 210 for the unsatisfied demand, and 300 to provide for the demolition of insanitary property. No council houses were completed during the year, but 182 are in course of erection.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 21ST, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 173 (last week 177); scarlet fever, 1528; diphtheria, 900; enteric fever, 54; pneumonia, 706; puerperal fever, 43; puerperal pyrexia, 94; cerebro-spinal fever, 7; acute poliomyelitis, 5; acute polio-encephalitis, 4; encephalitis lethargica, 21; dysentery, 3; ophthalmia neonatorum, 130. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 19 counties:—London, 9; Buckingham, 1; Derby, 12; Durham, 53; Essex, 3; Huntingdon, 1; Kent, 1; Lancaster, 5; Northampton, 1; Northumberland, 12; Nottingham, 2; Soke of Peterborough, 2; Stafford, 11; Surrey, 1; Yorks East Riding, 3; North Riding, 12; West Riding, 24; Glamorgan, 13; Monmouth, 7.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on July 24th–25th was as follows:—Small-pox, 23 under treatment; scarlet fever, 1771; diphtheria, 1849; enteric fever, 19; measles, 363; whooping-cough, 196; puerperal fever, 18 (plus 12 babies); encephalitis lethargica, 67; poliomyelitis, 2; "other diseases," 22. At St. Margaret's Hospital there were 21 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 5 (1) from enteric fever, 28 (5) from measles, 5 (3) from scarlet fever, 20 (1) from whooping-cough, 26 (8) from diphtheria, 36 (9) from diarrhœa and enteritis under two years, and 21 (2) from influenza. The figures in parentheses are those for London itself.

The four fatal cases of enteric fever outside London were reported from Southampton, Sunderland, and Newcastle-on-Tyne (2). Of the 23 fatal cases of measles outside London, 6 were reported from Liverpool. Of the 19 cases of whooping-cough outside London, 3 were reported from Birmingham. In the same week Glasgow reported 6 and Belfast 4. Belfast also had 6 fatal cases of measles. The deaths from diarrhœa are still diminishing.

The number of stillbirths registered during the week was 270 in the great towns (corresponding to a rate of 38 per 1000 births), including 53 in London.

Deaths from Small-pox.—A supplementary monthly statement shows that the returns for the month of June included, in addition to the deaths already shown in the Weekly Return, 6 deaths certified as due to small-pox either as principal or contributory cause. These deaths were assigned to the following areas:—Ilfracombe U.D., 1; King's Lynn M.B., 2; Thame U.D., 1; Keighley R.D., 1; and Gelligaer U.D. (Glam.), 1.

HERTFORD BRITISH HOSPITAL, PARIS.—The King and Queen have given their patronage to this hospital, which was founded during the seige of Paris in 1871 by the late Sir Richard Wallace. In 1879 Sir Richard erected a new building which his widow handed over to the British Government. The British Ambassador in Paris for the time being is the honorary president. The hospital is situated at Levallois-Perret, outside the fortifications, and has 46 beds.

EXTENSION OF LEEDS GENERAL INFIRMARY.—Particulars are now available of the proposed large extensions of this institution which, together with the discharge of the bank overdraft, will cost £250,000. There is to be a paying patients' block of three floors in which patients will pay some 5 to 7 guineas a week, according to the degree of privacy enjoyed. It is hoped that this block will help to remove the difficulties caused by the rapid growth of motor accident cases which are costing the infirmary £4000 a year, while the donations traceable to those concerned amount to less than £100. Another block, which is to be built first, will provide for another 100 non-paying patients—the waiting-list has rarely less than 1000 names. The building of these two new blocks will increase the total accommodation of the infirmary itself and the branches at Cookridge from 632 to 800 beds. The present average annual deficit is £25,000 and the extensions will increase the cost of maintenance from £104,000 to £120,000 a year.

Special Articles.

MEDICINE AND THE LAW.

Death Certification: Date of Certifying Practitioner's Last Visit.

THE primary purpose of the coroner's inquest is one of public safety—the detection of foul play, and consequently the prevention of crime. The result of the amending legislation of 1926 was to interlock the law relating to coroners and the law relating to the certification of death. It now is, or should be, as difficult as human foresight can make it to conceal a death or to dispose of a body without adequate official knowledge of the circumstances of the death. It also is, or should be, as difficult as human foresight can make it to dispose of a body by burial or cremation when death has not in fact taken place. These safeguards for the public have naturally not been evolved without enacting an elaborate code of statutes and regulations. There is some reason to think that medical practitioners, on whose coöperation the whole system depends, are not yet fully aware of the new legal position. The Registration Act of 1926 provided for a "prescribed" form of doctor's death certificate, and the form thus prescribed requires the doctor to state when he last saw the patient alive. Part IX. of the new regulations—the Registration (Births, Stillbirths, Deaths and Marriages) Consolidated Regulations of 1927—is headed, "References to Coroner and Registration after Reference—Stillbirths and Deaths." One of the occasions on which the registrar must report to the coroner before registering a death is where "it appears to the registrar from the particulars contained in the medical certificate or otherwise that the deceased was seen by the certifying medical practitioner neither after death nor within 14 days of death." Those who are apprehensive of the risk of a person being buried alive will reckon this regulation as intended to avert that danger as well as to lessen the chance that death might be caused by violence or poisoning in the interval between the practitioner's last visit and the date of death.

At a recent inquest, held in Southwark by Dr. F. J. Waldo upon the death of a woman aged 81, the coroner explained that the case had been reported to him by the registrar under the regulation already cited. It appeared that the medical practitioner had certified death to be due to natural causes, and that his last attendance had been seven weeks before the date of death. In these circumstances the coroner ordered a full post-mortem examination by an independent pathologist, and requested the attendance of the certifying doctor at the inquest. The pathologist's evidence agreed with the certificate, and thus the inquest merely confirmed what was already upon record. In answer to the coroner the pathologist agreed that, without careful expert examination of a body, it was not safe to assume that death had actually taken place. He cited an instance where the police had recently called him in to examine a youth in a state of catalepsy. The patient appeared dead but, on examination, a feeble pulse beat was found in spite of commencing rigor of the muscles of the jaw, absence of eye reflex, and dilated pupils—three characteristic signs of death; appropriate treatment ended in recovery. Dr. Waldo, in summing up, described the state of the law in connexion with death certification, registration, and disposal of the dead as unsatisfactory and dangerous. It was, he said, of vital importance to the public that the view and external examination of the body by the certifying doctor should be made compulsory before burial. Such a course would be a safeguard against any possible false assumption of death. Dr. Waldo's point is that a statutory period of 14 days, without any further view of the body, is neither a safeguard against premature burial nor a trustworthy precaution against the non-detection of foul play. He would have the present law amended in the following three respects: first, compulsory view of the body by the certifying practitioner who attended the deceased (with payment of a small fee for such duty) prior to registration of death by the local registrar; secondly, registration without report to the coroner, provided the certifying doctor had last attended his patient within 14 days of death and had also viewed the dead body; thirdly, statutory notification by the registrar to the coroner of all deaths of patients not seen by the certifying doctor within the 14 days period, to be followed by public inquest.

It is probably a surprise to some practitioners to find that coroners can, and do, order post-mortem examination and inquest where the certifying doctor has not seen the deceased within 14 days of death. Each case must be judged upon its own set of facts, and it may well be that one coroner would not take the same view of his responsibilities as another. Whether the law will soon be changed is doubtful. Parliament has only lately hammered out the new changes, and the arguments for different changes were fully discussed when the present ones were adopted. Sir Kingsley Wood, replying to a question by Mr. T. E. Naylor, M.P. for Southwark, in the House of Commons on July 11th, held out no prospect of further legislation at present.

A Point in the Coroner's Law.

A coroner asks a practitioner for certain information as to the cause of death of a deceased person to enable him to decide whether or not he will hold an inquest. The information desired in this case was technical both as to fact and opinion, and was given out of professional knowledge and experience. On consideration of the information the coroner decided to hold no inquest, and having held no inquest he paid no fee. Quite amicably, the doctor and the coroner have sought our opinion, or reference to any opinion that has been previously expressed in similar circumstances. The doctor considers that a fee is due to him, and the coroner, allowing the justice of the claim, replies that he has no power under the law to satisfy it.

It seems to us clear that the doctor should be paid, and equally clear that the coroner should not be at the expense of a fee for which he would be surcharged. A sentence in the Statute would suffice to meet the case, but changes in an Act of Parliament are not readily brought about; and while the situation may occur with sufficient frequency to suggest a demand for legislation, it is not clear to us that the existing position is not preferable. The doctor who supplies the coroner with the needful information is relieved of a responsibility to give medical evidence, and many practitioners would welcome this, while the relatives are spared a procedure that they always dislike unless they have reason for promoting an inquiry. In all such cases the coroner would know the feeling of the family and would hold the inquest. One natural source for the fee would be estate of the deceased, if there were any estate, but executors could not be bound to admit the doctor's claim.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Settlement of a Conflict Between the Profession and a Sick Club.

WITHIN the last few weeks a serious conflict arose between the entire medical profession in Vienna and the vast organisation called the Sickness Insurance Club for Civil Servants. This latter has about 280,000 members, and had hitherto offered free choice of practitioners to its members. Recently the administrative body of this club has tried to remove the bulk of the profession from the free choice list; doubtless the intention was gradually to substitute

for the free choice system—advantageous both to the profession and the patients, but not to the administrative body—a system of appointed doctors responsible only to the board of the club. As the remonstrances of the medical representatives were useless, from June 11th all medical work for the club was refused, and the members were received only as private patients. They were, however, entitled to demand compensation and a refund of the fees paid to the sick club. This led to troublesome conditions for all parties concerned, but mostly for the managing board, so that after some three weeks it was found more convenient to arrive at an understanding. The arrangement provides that in future the board of the club will not seek to introduce innovations of any kind pertaining to therapy without the consent of the medical representatives; the extent of specialist service to be available will be controlled by a board chosen equally by the club and the profession. Some minor problems were settled at the same time, in a sense favourable to the practitioners, so that this strike—the first instance of a medical fight on the lines of trades-unionism in this country—can be looked upon as having ended in favour of the doctors.

Decapsulation of the Testicle as a Means of Rejuvenation.

Intense public interest seems to be aroused by any suggested methods of regaining lost youthfulness. Prof. Ullmann (Vienna) has now published his observations on the method of "decapsulation," practised by him since 1915, but hitherto unpublished. He has had the opportunity of making transplantations of testicles in cases of ectopia testis, and of examining such cases after a few years. In each case new blood-vessels had formed, but only if the transplantation took place in individuals belonging to the same blood group or a related one. Otherwise the transplanted organ was gradually absorbed. This he holds to be the fate of the testicles transplanted from monkeys or other animals (Voronoff). In such cases transplantation acts only as a stimulus, like a non-specific protein injection. Ullmann claims now that the safest and most reliable method of producing lasting hyperæmia—and thus a hyperproduction of the hormones—in the testis is to decapsulate it and thus offer it means to expand, since the primary reason for diminished function of the testes is, according to him, the increasing intra-testicular pressure with lessened blood-supply, due to sclerotic processes. Prof. Ullmann lays stress on the fact that, in 1915, when the problem of blood-group relation was unknown, transplantation was applied in a wrong way, and that now his method, which is very simple, should be tried in suitable cases.

Resignation of Prof. Wagner-Jauregg.

The well-known neuro-pathologist and latest recipient of the Nobel prize for medicine, Prof. Wagner-Jauregg, has resigned his post as chief of the clinic for neurology and psychiatry in Vienna, having attained the age of 71. His farewell lecture, held a few days ago, was marked by a number of farewell speeches from his pupils. The professor himself completed his task by delivering a splendid lecture on the treatment of tabes, after which Prof. Redlut and Dr. Poetzl, on behalf of the former and the present pupils, spoke of the importance of his contributions to the advance of neurology, notably in the prophylaxis of thyroid enlargement and the malarial treatment of general paralysis of the insane and tabes dorsalis. The office of Wagner-Jauregg will be filled shortly either by Prof. Economo (Vienna), well known for his researches on encephalitis lethargica, or by Prof. Poetzl (Prague), the first-named being regarded as the more likely candidate.

Statistics Concerning Suicides in the Half Year 1928.

The public records for the first half of 1928 show that 1528 persons attempted to commit suicide in Vienna, of whom 507 attained their object. These figures show a marked and constant increase in comparison with the years before the war and the period immediately following it, the number of attempts being double those recorded in 1917. It is remarkable that while the same number of men and women tried to kill themselves, only 199 women succeeded in doing so, against 308 men. As regards the causes of suicide, 287 (106 of these were men) tried to destroy their lives for family troubles; 275 (165 men) because of poverty, 160 (80 men) for incurable illness, 160 (55 men) an account of love affairs, 130 persons (78 men) were insane; 41 men and 5 women despaired of their financial position or outlook, 17 men and 22 women were prompted by a severe family loss. In 433 cases (221 men) the reasons were unknown.

American Post-graduate Students in Vienna.

This summer, as usual, a large number of American doctors have made our university their temporary home. In the last week of June a group of over 60 doctors, under the leadership of Prof. George MacKenzie, of Chicago, have been here, having arranged beforehand to attend a number of special courses in the clinics of Profs. Neumann, Hejek, and Masschik (oto-rhino-laryngology) and Profs. Meller and Lindner (ophthalmology). These classes will last six weeks each, and will occupy ten hours daily, so that each student will obtain 300 hours of instruction. These zealous post-graduate students, in order to fit themselves to make the most of the instruction provided, attended classes conducted by Prof. MacKenzie, as an introduction to oto-rhino-laryngology and ophthalmology. Post-graduate courses in Vienna are much favoured by the Americans; already more than 300 have put down their names for courses in the session 1928–29. A special American Medical Association of Vienna controls and organises these courses, which are held in English.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Venereal Diseases.

IN Dr. William Robertson's report on the health of Edinburgh in 1927 reference is made to venereal diseases and to the House of Common's refusal of a second reading to the Corporation Bill. The report notes that certain forms of disease are on the increase despite all that has been said and done to educate the public. It is unfortunate that moral and social questions have been introduced to hamper us in our efforts to control the spread of these dangerous infections. Venereal diseases are much more serious than other maladies because, if incompletely treated, they may have disastrous after-effects. It was because we are aware of the serious consequences to the individual and to future generations that we desired to secure a better control of the disease in its different forms and phases. We may as well cry for the moon to come down to earth as expect to get the better of venereal diseases by voluntary methods. The great majority of infected persons will continue to present themselves for treatment, but unless we have the power to compel those who are indifferent, careless, or obstinate to rid themselves of the disease we must expect to find a continuation of mental deficiency, affections of the nervous system, miscarriages, as well as chronic and often indefinable ill-health among men, women, and children. Our effort has been arrested by dialectics. Those who have experienced the difficulties and understand the problem from actual contact with it have been seriously discouraged though not disheartened.

The Slaughter of Sheep.

A report on the investigation carried out in Edinburgh on June 14th has now been issued by Dr. Henry Dryerre, Professor of Physiology at the Royal

Dick Veterinary College, and Dr. J. D. S. Cameron, Physician to the Royal Dispensary. They state that 60 sheep were provided, and at their request the suggested methods of slaughter were amended and ordered as follows: (1) sticking and checking, 20 sheep; (2) shooting and sticking, 20 sheep; (3) shooting and sticking, and breaking of the neck, 10 sheep; (4) sticking and checking, 10 sheep. In the determination of when consciousness was lost, they based their conclusions upon the disappearance of certain cerebral reflexes. They give it as their opinion that shooting and sticking is much to be preferred to sticking and checking, from the humanitarian point of view and, further, that after shooting, no humanitarian benefit is derived from checking or neck-breaking. They realise that sticking is necessary from the utilitarian point of view, and no objection can be taken to this procedure, on the grounds that it produces pain, if shooting precedes it.

The Scottish Health League.

A meeting of the provincial council of the Scottish Health League was held recently in Glasgow, with Prof. Carstairs Douglas in the chair. A large and representative General Council was elected, including many well-known members of the medical and dental professions, together with 94 medical officers of health throughout Scotland. Colonel P. S. Lelean, Professor of Public Health in the University of Edinburgh, was elected chairman, and Dr. A. K. Chalmers, vice-chairman of the General Council, with Dr. David McKail hon. secretary. The following Executive Council was elected: Dr. M. Adams McVey, L.D.S., Dr. Thomas Adam, Dr. G. G. Buchanan, Dr. Agnes Cameron, Mr. J. Menzies Campbell, L.D.S., Dr. A. K. Chalmers, Prof. Carstairs Douglas, Dr. R. C. Scott Dow, L.D.S., Dr. James Kerr, Prof. P. S. Lelean, Dr. G. W. McIntosh, Dr. David McKail, Dr. G. V. T. McMichael, Dr. J. Hume Patterson, Dr. D. L. Radford, L.D.S., Dr. G. Y. Richardson, Dr. T. Lauder Thomson, Dr. Margaret Tod, and Dr. Chalmers Watson.

The Council intends to form an advisory council, and health societies and social organisations operating in Scotland have been invited to nominate representatives. It has been decided to inaugurate branches of the League throughout Scotland, and it is hoped that all interested in the dissemination of knowledge upon healthy living will coöperate with the Council.

Larbert Colony Scheme for Adult Mental Defectives.

The directors of the Royal Scottish National Institution, Larbert, are appealing for support towards the colony now being established at Larbert Estate for the whole-life care of adult mental defectives. For the last 65 years the Royal Scottish National Institution has provided a home, care, and training for mentally defective children, of whom there are at present over 500 in the home; but these children have to be discharged on arriving at the age of 16 or 20. The directors emphasise the dangers which this involves both for the mentally defective themselves and the community. The colony scheme has been adopted by every other progressive country, but has not hitherto been attempted in Scotland.

Students' Attitude to Charity.

Edinburgh students have recently been considering a proposal that they should run a "Charities Week" of their own instead of merely helping the organisers of the Royal Infirmary pageant on Infirmary Day. The suggestion, which was discussed by the students' representative council, has not met with general approval. Such efforts are made annually in Glasgow and Aberdeen, and they have hitherto met with great success. In deciding not to follow the example of the students of these two cities, the Edinburgh students were of opinion that the idea of collecting for charity was being carried too far. In Glasgow, for instance, the students started quite modestly. But they always set themselves out to beat their previous total, with the result that the campaign is now gigantic, and they find themselves committed to a big piece of organisation. Necessarily they have only a limited amount of spare time. It is no longer an enjoyable rag, but a serious, arduous campaign, with months of preparation. Again, in Glasgow and Aberdeen the infirmaries do not organise pageants of their own as is done in Edinburgh, and the concerted effort of the students is the only one of the year in these cities.

The students will, of course, continue to do their best on Infirmary Day.

The Trend of Medicine.

The place which the physician has held in the world in the past and the place which he is likely to hold in the future were touched upon by Prof. William Wright Smith, in the course of an address at the summer graduation in medicine at Edinburgh University on July 18th. The trend of medicine, he said, was to the prophylactic. In the plant world it had been realised long ago that cure was at best difficult—prevention was the aim. How would these changes affect them in the public eye? We were still far, perhaps, from the institution of a scientific medical police. But would the tendency be for the medical man to become more and more of an official? Officials were not loved. But as long as the ethical obligations, so characteristic of the past, continued on the same high level, the favourable status of the profession was assured.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. D. G. Addison-Scott is placed on the Retd. List with rank of Surg. Capt.

Surg. Comdr. T. C. Patterson to *President*, for Medical Dept., temp.

ROYAL NAVAL VOLUNTEER RESERVE.

Prob. Surg. Lts. R. Pedlow and W. T. Donovan to be Surg. Lts.

ROYAL ARMY MEDICAL CORPS.

Capts. to be Majs.: C. B. C. Anderson, P. E. D. Pank, and G. Moulston.

ARMY DENTAL CORPS.

Temp. Capt. W. L. Pearson, Dental Surg., Gen. List, to be Capt.

Lt. (on prob.) R. W. Mather is confirmed in his rank.

TERRITORIAL ARMY.

Capt. E. Scott to be Maj.

J. R. Wright and G. C. Vaughan to be Lts.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Army Dental Corps.—Lt. H. G. L. Fletcher, from T. A. Res. of Off. (5th Bn. Foresters), to be Lt.

ROYAL AIR FORCE.

The temp. commn. of Flying Officer S. McC. Craig (temp. Lt., Gen. List, Army Dental Surgeon) is terminated on relinquishment of his Army commission.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. W. D. Miller is transferred from Class D2 to Class D1.

INDIAN MEDICAL SERVICE.

Capt. D. R. Thomas to be Maj.

Nand Lal Sah and Bhawani Das Sindhwani to be temp. Lts.

The undermentioned retire: Maj.-Gen. A. A. Gibbs and Lt.-Cols. H. Watts and W. Lapsley.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon Majs. R. I. Dacre, A. Young (ret.), and W. T. Briscoe.

BIRMINGHAM CHILDREN'S HOSPITAL.—The board of governors report that during the first six months of the present year the number of patients admitted was 2798, nearly 250 more than in the same period last year. The waiting-list exceeds 700, and two new wards are to be built to provide 40 more beds, together with an isolation block.

Correspondence.

"Audi alteram partem."

CANCER: VIRUS OR ENZYME?

To the Editor of THE LANCET.

SIR,—After what we have suffered at the hands of too imaginative reporters, it is refreshing to read your admirable leading article under the above title. At no time have we suggested that cancer in general is due to an enzyme. All that Dr. Murphy and I have claimed is that a certain tumour of fowls, commonly known as Rous Sarcoma No. 1, is produced by a chemical substance of enzymic nature and not by a virus in the ordinary acceptation of the word. I am a little surprised at your verdict that "the essential problem presented by the filterable tumour of the fowl is not whether the causative 'agent' is a virus or an enzyme." My memory may be playing a prank on me, but I seem to recollect that just three years ago you wrote in an article which was quoted all over the world, that the conclusions of Gye and Barnard provided "a solution of the central problem of cancer." These conclusions were based entirely on the belief that the same chicken tumour agent was a *virus*. If it is an enzyme, then the whole theory fails.

In the annual report of the British Empire Cancer Campaign, published on July 9th, I mentioned that I had once induced the Rous sarcoma by the injection of minced normal fowl pancreas, but I did not feel inclined to attach undue importance to it, as it was a solitary observation. It was only when my friend, Dr. Murphy, informed me of his more recent and more extensive experiments that I urged him to communicate them briefly to the International Conference on Cancer. When these are published in detail I think they will supply the information you desire.

The demonstration of the enzymic nature of the chicken-tumour agent, as you very well say, "would not in itself solve the problem of malignancy, but would rather present us with a phenomenon of far-reaching significance in its general biological aspects." My recent communication shows that I have realised this, and I can assure you, Sir, that although Dr. Murphy did not discuss it in his paper, he is well aware of the implications.

I am, Sir, yours faithfully,
ARCHIBALD LEITCH.

Cancer Hospital Research Institute, Fulham-road, S.W., July 30th, 1928.

"CARDIAC CLINICS."

To the Editor of THE LANCET.

SIR,—I shall be glad to be allowed space to comment on the letter from Dr. W. Robert F. Collis which appears in your last issue (p. 199).

1. I do not think that it should be said that in England we are apt to regard America as free from juvenile rheumatism. On the contrary, American reports and papers have been much studied here and, as their value deserved, widely quoted.

2. It is good to read of Dr. Collis's enthusiasm for special clinics for the study of rheumatic heart disease in children, but we are not, perhaps, as far behind in this matter here as he thinks. Glasgow was the first in the field, but there are now in the metropolitan area of London seven such centres (see *L.C.C. Gazette*, July 16th, 1928); and there are others, probably many others, in the provincial cities and big towns. In most cases such centres are attached to hospitals and are under the direction of one of the physicians on the honorary staff, but two of the seven London ones are under the care of Dr. Dobbie, of the L.C.C. Medical Service. As only 15 months have elapsed since the publication of the second report of the British Medical Association Committee on Rheumatic Heart Disease in Children, in which the establishment of such centres in connexion with hospitals was advocated, I think the response of the voluntary hospitals has been extremely good.

3. I still hold that to call such centres "cardiac clinics for children" is, in spite of the alluring alliteration, the greatest possible mistake. As the B.M.A. Committee considered, unless the word "rheumatism" is included in the title, attempts at the prevention of rheumatic heart disease are bound to be handicapped. What the poor make of the word "cardiac" I do not know, but certain it is that hospital parents, although they may know that their child has rheumatism, hardly ever suspect the presence of heart disease. For this reason most of the clinics have in England been called "rheumatism supervisory centres." This tends, no doubt, to fill the clinic not only with "potential cardiacs," but even with "potential rheumatics," yet, surely, the right way to study rheumatic heart disease in children is in terms of the great systemic infection rather than as a static disease of a single organ.

4. In a less important and personal matter, I beg leave to state that I have never held nor expressed the view which Dr. Collis attributes to me, that "the environmental factors at work (of which cold and damp are the most important) must to some extent centre round the production of disease-infected tonsils." The phrase in brackets does not occur in my paper, nor does it correspond with anything in my mind.

As this exaggerated view has been attributed to me before in your correspondence columns and militates against the success of much for which I am striving, I should like to add that to call attention to cold damp as a possible factor in the production of juvenile rheumatism is no reason for my being credited (or debited) with the view that this is the chief thing operating. I hold that there are half a dozen predisposing factors, and where these "click" (as the saying is) there develops juvenile rheumatism. Of these factors, exposure to cold damp is one—sometimes absent, but often important.

I am, Sir, yours faithfully,
REGINALD MILLER.

Harley-street, W., July 28th.

GLYCERINE IN THE TREATMENT OF SUPPURATIVE OTITIS MEDIA.

To the Editor of THE LANCET.

SIR,—When house surgeon to the Royal United Hospital, Bath, in 1884, it was difficult to treat satisfactorily cases of suppurative otitis media with the dry dressings then in vogue, because the out-patients were unable to attend with sufficient regularity. Something therefore had to be found for home use. I began with perchloride of mercury in glycerine 1 in 1000. The results were astonishing, recent cases completely recovered in a few days, and chronic cases after having resisted all other known forms of treatment. The value attributed to glycerine is its hygroscopic quality which permits it to search the innermost recesses of the suppurating sinuses with the antiseptic dissolved in it. I mentioned this treatment to my old friend, Prof. Rushton Parker, and we find him at the British Medical Association meeting at Newcastle in 1893 advocating it as routine treatment, on which reliance could be placed. He tried carbolic acid in glycerine, which is equally good. Whether perchloride of mercury or carbolic acid be employed, the glycerine must be neat without the addition of water. One case made a deep impression on me, that of an American who had had a discharge from his left ear for 30 years. There was a large perforation of the tympanic membrane at the lower and posterior quadrant which completely healed and his hearing returned. Now, years after my retirement, I come across cases among acquaintances and friends where all treatment has been given up in despair, but which recover under the glycerine perchloride application.

I am, Sir, yours faithfully,
T. PAGAN LOWE.

Charmouth, Dorset, July 24th.

POST-OPERATIVE MASSIVE COLLAPSE OF THE LUNGS.

To the Editor of THE LANCET.

SIR,—The importance of post-operative pulmonary complications is ably set out by Dr. C. R. Boland and Dr. J. E. Sheret in their paper on massive collapse of the lung, which appeared in your issue of July 21st (p. 111). The clinical description and the radiograms are admirable, but the explanation of the process seems inadequate. If the massive collapse be due to plugging of bronchi why should it be more frequent in upper abdominal operations, why should it be entirely independent of the anæsthetic administered, why should it occur at all ages with equal frequency, and why should it be met with in cases where there is not the least suspicion of bronchitis or increased bronchial secretion?

That a plugged bronchus can cause collapse of the lung is well known; undoubted cases have been seen and described. When a large bronchus is plugged the onset is sudden—absolutely sudden—and the patient becomes immediately urgently ill and cyanosed. The lung slowly deflates, and the patient becomes gradually accustomed to his diminished oxygenating area and regains comfort. Later on he begins to expectorate, and slowly recovers his pulmonary function. The degree of deflation is never as great as that seen in the most severe cases of massive collapse, and the breath sounds over the lung with a plugged bronchus are absent even before deflation has begun. Bronchial breath sounds are not heard. This picture is a complete contrast to that given by massive collapse which follows injury or operation Here the onset of symptoms is more gradual, dyspnœa appears within a few hours of the injury and gets worse, some slight duskiness may be detected, but cyanosis is seen only in the worse cases. Commonly both lungs are affected moderately, often one rather more than the other, usually the right base is the more deflated; but when one lung is affected the degree of deflation is considerable and may be complete. Respiration is quickened and shallow; on the affected side thoracic movement is limited, interspaces are indrawn during inspiration, and the abdomen is rigid. Breath sounds are weak at first, later become bronchial, and in complete deflation are absent except over the lung root.

Of the gunshot injuries which I saw during the late war I still possess records of 666 cases; of these a large number showed some bilateral deflation of the lungs; 30 showed massive collapse of one lung, and nine had complete collapse of one lung. Among many post-mortem examinations were two on men who died (8 and 14 hours after being wounded) apparently of lung collapse. My note is a follows:—

> The lungs are extremely small, only filling about a quarter of the pleural sacs. They are blue and solid-looking. Pieces of the lower lobes sink in water, but the upper lobes are crepitant. There is no evidence of any bronchial obstruction; the bronchi do not contain blood or any excess of secretion.

Two of the most marked examples of complete pulmonary deflation which I have seen occurred in (1) a soldier shot through the upper part of the left shoulder—lung and pleura uninjured; (2) a girl of 18 who had a hemithyroidectomy under local anæsthesia. Neither of these cases showed cough or expectoration at any time.

Plugging of a bronchus is then an inadequate explanation of post-operative or traumatic collapse of the lungs because it fails to explain: (1) the common bilateral and occasional extensive unilateral deflation; (2) the gradual extension of deflation to the upper lobe of the affected lung; (3) the presence of bronchial breath sounds and increased vocal resonance in the affected lung.

As a result of my experience of examination of hundreds of men with thoracic wounds during the late war, examinations which were clinical, X ray, visual at the time of operation, and, in a number of cases, post mortem; also of the examination of a considerable number of cases of lung complications following operation since the war, I suggest that massive collapse of the lung can only be explained adequately on the following theory.

1. That as a result of a stimulus applied to the body somewhere between the hyoid and the pubes (these are the limits within which in my personal experience injuries have been followed by massive collapse) a reflex constriction of bronchioles is set up.

2. That normally this reflex affects both lungs equally, and results in a decrease in the lung volume with raising of the diaphragm on both sides, and an increase in the negativity of intrapleural pressure. This condition was well seen and was very common in the wounded soldiers in France. In men who had small pleural effusions as the result of a thoracic wound the intrapleural pressure was more negative than normal in spite of the effusion, and the removal of even a few ounces of fluid during the first 48 hours after the injury was likely to be followed by cyanosis, dyspnœa, and marked thoracic pain.

3. In some cases the reflex affects only one lung, not necessarily on the side of the injury, and massive collapse results. It may be that normally the whole bronchial tree dilates slightly during inspiration and again during expiration. Failure to dilate during inspiration with normal dilatation during expiration would lead to pulmonary deflation, and if the abnormality were unilateral to marked collapse.

If we suppose that a reversal of this supposed normal mechanism is possible, so that a normal inspiratory dilatation is converted into an inspiratory constriction of bronchi while the expiratory mechanism remains normal, a far greater degree of deflation is possible. A reversal of the conditions following an injury—that is, a reflex constriction of the bronchi during expiration with normal dilatation during inspiration—may explain the phenomena of asthma, in which expiration is longer than inspiration, and lung overdistension is found.

There are many data in experimental physiology which confirm the presence and action of both dilator and constrictor muscles in the bronchi, and the condition of the lungs in guinea-pigs killed by anaphylactic shock strongly suggests the reflex constriction of bronchi. But the importance of lung collapse lies in (1) its comparative frequency after operations of the upper abdomen, (2) its liability to be the starting-point of pneumonia, (3) the means to be taken to prevent it, (4) treatment. For prevention I believe that combined regional and general anæsthesia should be most effectual.

For treatment in the most marked cases I believe that the best procedure is to introduce a small quantity of air into the pleura on the side of the collapse. This allows the diaphragm to move normally, restores the mediastinum to its median position, and relieves distress—I am, Sir, yours faithfully,

K. DOUGLAS WILKINSON.

Birmingham, July 25th, 1928.

To the Editor of THE LANCET.

SIR,—In THE LANCET of July 21st Dr. Boland and Dr. Sheret advise post-operative postural drainage of the bronchial tree, as a prophylactic of massive collapse, in other words, removal of the secretions when formed. May I suggest that a better method, and one more truly prophylactic, is to prevent the formation of the secretions? In a fairly long experience, extending over many hundreds of abdominal operations, I cannot recall a single instance in which any kind of lung complication occurred, in any case in which the preoperative condition of the lungs was normal and the peritoneal cavity not infected. Instead of the usual preoperative hypodermic injection of atropine gr. $\frac{1}{100}$ with morphia gr. $\frac{1}{6}$ to $\frac{1}{4}$, the patient (adult) is given, half an hour before the operation, an injection of atropine gr. $\frac{1}{50}$ without morphia. This makes the patient so dry that, when he reaches the theatre, he can scarcely smack his lips. This dried-up condition usually persists throughout the operation and for some hours afterwards. Very exceptionally, and only if the patient is secreting profusely, atropine gr. $\frac{1}{50}$ is

repeated, either at the end of the operation or after return to the ward. Nearly every case was anæsthetised with ether and was nursed, after operation, in the Fowler position.

I am, Sir, yours faithfully,

Plymouth, July 28th. C. HAMILTON WHITEFORD.

SMOOTH AND ROUGH VARIANTS OF BACTERIA.

To the Editor of THE LANCET.

SIR,—In a special article on this subject appearing in your issue of July 7th (p. 31), it is pointed out that many bacteriologists now recognise that there are wide adaptive fluctuations within the "species," or races, of many bacteria. Later on, however, the writer remarks that the observations of Todd [1] and Cowan [2] are inconsistent, by which I presume he means that both these authors cannot be right because the former found that the rough colonies of streptococci were more virulent than the smooth, whereas the latter found that, as in most other bacterial races which exhibit this phenomenon, the smooth streptococci were relatively more virulent than the rough. Since this is the second time within a week that I have seen the same criticism of Todd and Cowan's results, I thought that a note on one experience at Greenwich might be of general interest.

If S and R are used merely as convenient terms to denote colony appearance without any implication of antigenic structure, then diphtheria bacilli (*Corynebacterium diphtheriæ*) show well-marked rough and smooth varieties when grown on certain culture media. During the years 1922 to 1924 I collected over 100 strains of *C. diphtheriæ*. The chances among this series that an R or S strain would be toxigenic or not were about equal. There was no correlation whatever between the two pairs of characters, R and S, and virulence and avirulence. During 1927 and 1928 nearly 200 strains of *C. diphtheriæ* were isolated from the same school and were examined for R and S qualities and toxigenicity by my co-worker, Surgeon-Commander Parker.[3] The R strains were all avirulent, without any exception, the S strains only produced five avirulent cultures. In this series, therefore, R was always correlated with lack of virulence while S forms were almost invariably virulent to guinea-pigs. I think this evidence, in the lack of any further information, would have been considered good enough by many workers to conclude that the rough variants of *C. diphtheriæ* were always atoxic. The evidence might have led me into such a mistake, but for my past experience and the fact that Parker examined a further 50 strains of *C. diphtheriæ* collected from the environment outside the school. This last series of cultures showed no significant agreement between these characters, the R and S varieties containing both virulent and avirulent strains. These investigations show that, in as distinct a "species" of bacterium as it is practicable to define, two characters could at one time be completely correlated, while in *the same place* at another time the same characters would show no significant correlation. Similarly in one environment, correlation was complete while at *the same time* in a different environment there was no agreement between the same sets of character.

The variability of bacteria is of such fundamental importance in medicine that two further recent observations bearing on this subject are worth noting. Whittle,[4] in a recent paper, makes a praiseworthy attempt to discover a reliable method of distinguishing pneumococci from streptococci. After confessing there are certain discrepancies between his results and that of other workers in the same field, he found bile solubility to be the most reliable criterion by which to recognise a pneumococcus. But after finishing his paper he had the bad luck to find a completely bile-insoluble Type I. pneumococcus which had to be put in a footnote. By a striking coincidence in the same number of the journal which contained the previous reference, Griffith[5] describes a fully virulent R variety of pneumococcus, the only exception he had found in his extensive experience, to the rule that R strains of pneumococci are relatively avirulent to mice when compared with S. Here were two "laws" which seemed inviolate until the exceptions turned up. After our experiences at Greenwich it is conceivable if Whittle or Griffith were to repeat their work in a different country or in 10 to 50 years' time the exception might have become the rule and the rule the exception! Hence there is no necessity to consider such observations as those of Todd and Cowan to be mutually incompatible, especially as these investigators only used a very small number of strains of streptococci in their experiments.

The very fact that there are so many apparent inconsistencies in bacteriological literature would indicate that incongruities are just as often due to bacterial variability, as to errors or differences in technique which is the explanation some bacteriologists still seem to prefer. The bacteria as a group are the most plastic of living organisms, and the different races fluctuate round a conventional specific type. It is one of the most important and difficult tasks of modern bacteriology to define the limits, and estimate the rapidity, of these adaptive fluctuations and to try to discover the environmental stimuli which produce them. Griffith's work, just referred to, is a brilliantly original attempt to do this in the case of pneumococcal types, whether his results are ever confirmed or not. We cannot be reminded too frequently that the "species concept" applied to bacteria is far less definite than when applied to the sexual metazoa. As long ago as 1912 Minchin [6] was uncertain if "species," in the strict biological meaning, occurred among the bacteria at all. Although I would not go as far as that, yet these doubts of an eminent worker in pure biology are a salutary subject for the worker in applied medical biology to ponder over.

I am, Sir, yours faithfully,

SHELDON F. DUDLEY.

Royal Naval College, Greenwich, July 26th, 1928.

[1] Todd, E. W.: Brit. Jour. Exper. Path., 1928, ix., 1.
[2] Cowan, M. L.: Ibid., 1927, viii., 6.
[3] Parker, H. B.: Ibid. (in the press).
[4] Whittle, C. M.: Jour. of Hyg., 1928, xxvii., 200.
[5] Griffith, F.: Ibid., 1928, xxvii., 114.
[6] Minchin, E. A.: An Introduction to the Study of the Protozoa, London, 1912, p. 141.

CANCER AND DIET.

To the Editor of THE LANCET.

SIR,—On p. 192 of your last issue a speaker at the recent Cancer Conference is reported as saying that "a campaign had been going on amongst the medical profession that certain forms of food produced cancer. An eminent surgeon was even devoting his life to persuading the public that cancer was due to eating meat." As chairman of the Food Committee of the New Health Society and therefore closely connected with its dietetic propaganda, may I state that no such absurd statement has ever been issued by the Society or by its president. The ultimate damage that may accrue from long continued malnutrition and other results of a faulty diet may, in the opinion of some of us, help to explain the cancer problem. This is a theory that the public, at any rate, will be well advised to ponder and act upon.

I am, Sir, yours faithfully,

S. HENNING BELFRAGE.

New Health Society, London, July 31st, 1928.

THE MEDICAL DIRECTORY.

To the Editor of THE LANCET.

SIR,—The annual circular has been posted to each member of the medical profession. If the form has not been received, a duplicate will be sent on request. We shall be grateful for the return of the forms by an early post.—We are, Sir, yours faithfully,

J. AND A. CHURCHILL.

40, Gloucester-place, Portman-square, W. 1, July 26th, 1928.

Obituary.

SIR ARTHUR CHANCE, F.R.C.S. & P. IREL., HON. F.R.C.S. EDIN.,

PAST PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.

WE regret to announce the death of Sir Arthur Chance, which occurred at his residence, Merrion-square, Dublin, on July 26th, after a long illness, at the age of 69 years. He had been for many years one of the most prominent members of the profession in Ireland and his death will be regretted by a large circle of patients and friends.

Born in 1859, son of Albert Chance, of Dublin, he received his education in Dublin and obtained diplomas from the two Royal Colleges in 1880, and at once devoted himself to surgery. Whilst a very young man he was appointed surgeon to Jervis-street Hospital, and a few years later moved to the Mater Misericordiæ Hospital, with which he remained connected for the rest of his life. He took an active part in the work of the Council of the Royal College of Surgeons, of which College he was elected President in 1903. For many years past he has represented that body on the General Medical Council and last year was nominated as its representative on the Medical Registration Council of the Irish Free State, a post which, however, he had speedily to resign on account of ill-health. From 1917 to 1920 he was Inspector of Military Surgical Hospitals in Ireland, with the rank of colonel in the Army Medical Service. He filled a term as President of the Royal Academy of Medicine in Ireland, and was surgeon to more than one Viceroy of Ireland, so that when in 1905 he received the honour of knighthood the distinction had been anticipated for him by all who knew him. There were few public professional activities in Ireland in which he did not take an active share. Specially interested in education, he gave very useful service to the General Medical Council, while he was determinedly opposed to any change in the system of medical registration after the establishment of the Irish Free State.

SIR ARTHUR CHANCE.

Photo by Lafayette.

Chance was a man of great versatility and quickness of intellect, who would have been successful in any profession he might have chosen to adopt. His prudent leadership and shrewd judgment will long be missed, and he will be remembered as having played an important part in Irish affairs at a time of special difficulty.

He married, first, Martha, daughter of Daniel Rooney of Belfast, and secondly, Eileen, daughter of William Murphy, of Dartry, who survives him with eight sons and five daughters. Three of his sons are members of the medical profession, one, Mr. Arthur Chance, being surgeon to Dr. Steevens' Hospital, Dublin.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—Diplomas of L.R.C.P. and M.R.C.S. have been conferred upon 167 candidates (136 men and 31 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the by-laws of the Colleges. The following are the names and medical schools of the successful candidates:—

G. Allen, Birmingham and London; J. M. Anderson, Durham and Charing Cross; W. R. Ashby, Cambridge and St. Bart.'s; Julia C. H. Avery, St. Mary's; Gertrude C. Banks, Royal Free; S. Behrman, St. Bart.'s; W. A. G. Bell, Cambridge and St. Thomas's; A. Bennett, St. Bart.'s; Mary Berkeley, Royal Free; T. H. Berrill, Bristol; S. P. Bhatia, Bombay and St. Thomas's; C. H. Birt, Birmingham; F. A. Blackwood, St. Thomas's; Kathleen L. Bland and J. R. Bond, Univ. College; V. G. Morgaonkar, Bombay and London; N. J. Boulton and R. V. Bradlaw, Guy's; J. V. Broad, Cambridge and St. George's; Nellie Brown, Westminster; E. C. B. Butler, London; Beatrice A. Butterworth, Royal Free; E. N. Callum, London; Catherine F. Cameron, Cambridge and Royal Free; L. A. Canaan, Yale and London; Mavis H. D. Carr, Cambridge and Royal Free; T. H. Carr and B. R. Caygill, Leeds; Muriel G. E. Clark, Charing Cross; W. A. Clements, Sheffield; Nellie Clifton, Royal Free; Lilian M. C. Clopet, Cardiff; Dorothy M. Conyers, Royal Free; T. M. Corcoran, Univ. College; O. J. C. Cotton, Cambridge and St. Thomas's; E. Courtin, St. Thomas's; J. H. Crawford, Cambridge and St. Mary's; A. T. Croucher, St. Mary's; A. M. Cunningham, Cambridge and Univ. College; D. W. Currie, Leeds; T. Dagger, Liverpool; A. Danin, Guy's; H. W. Daukes, St. Thomas's; W. P. M. Davidson, St. Bart.'s; E. L. F. De Mel, Ceylon; W. F. de Villiers, Cape and London; P. Dickman, Cape and Charing Cross; C. J. V. Dobbin, Guy's; G. H. Dobney, Middlesex; J. F. Duesbury, Birmingham; J. W. Ellis, Guy's; R. C. S. Evans, Cardiff; A. C. Fisher and Cecilia F. Fox, Bristol; P. H. Fox Cambridge and St. Bart.'s; E. Fulford, Guy's; G. H. Garfield, Cardiff; R. J. S. Garrow, St. Thomas's and Leeds; F. W. Gilbert, Guy's; Agnes G. Gillespie, Liverpool; Y. Gimpelson, Royal Free and St. Mary's; L. Godlove, Leeds; S. Goldman and J. P. Gubbins, London; J. C. Heather, Guy's; Kathleen M. Henderson, Laurel K. Heny, Helen M. Herbert, and Alice D. M. Hodge, Royal Free; F. E. G. Hopkins, Cambridge and Guy's; D. R. House, Bristol; I. M. Hughes, Manchester; E. A. Hunter, London; M. Jafar, Punjab; M. K. Jilani, Lahore and Liverpool; A. W. Johns, London; S. Kaul, Punjab and St. Bart.'s; G. H. Kennett, Sydney; B. Kettle, St. Bart.'s; G. G. King, Madras and St. Mary's; M. L. Kreitmayer, St. Bart.'s; Nellie I. Lanckenau, Royal Free and Univ. Coll.; Kenneth E. Lane, Guy's; T. C. Larkworthy, Cambridge and St. George's; E. G. Laurence, St. Bart.'s; R. R. Leaning, St. Mary's; J. C. Leigh, Leeds; G. Leighton, Birmingham; G. E. Lewis, Cambridge and London; I. B. Limbery, St. Thomas's; Kathleen M. MacLaren, Westminster; G. C. C. MacVicker, Cambridge and St. Bart.'s; M. J. Malley, St. Bart.'s; F. B. Mallinson, St. George's; H. M. Mikhail, Univ. College; Hermia M. Mills, Royal Free; L. Milner, S. Africa and Guy's; W. E. S. Moreton, Charing Cross; R. H. Morley, Leeds; I. Morris, Univ. College; L. H. Morris, Cambridge and London; O. N. Morris, King's College; J. E. Morton, Guy's; Millicent Moseley, Birmingham; J. H. Moynihan, Charing Cross; Bhavani Natarajan, Bombay; L. A. Newton, St. Bart.'s; H. G. Nimbalker, Bombay and Middlesex; G. P. Nixon, St. Bart.'s; G. W. Oliphant, Guy's; E. G. M. Palser, Univ. College; A. W. Patton, St. Bart.'s; Margaret E. Peaker, King's College; M. G. Pearson, Oxford and Westminster; A. L. P. Peeney, Manchester; R. L. P. Peregrine, Oxford and Guy's; F. Phillips, Adelaide and London; J. A. Pocock, Cambridge and Univ. College; H. G. Pritchard, Oxford and Charing Cross; N. L. Probert, Cardiff and Middlesex; A. Rabinowitz, Berlin and Middlesex; R. H. Raine, Durham; R. J. H. Raines, Leeds; E. A. P. S. Rawlings, Charing Cross; R. G. E. Richmond, St. Thomas's; D. T. Robinson, Manchester; J. B. Robinson and W. P. Roe, Guy's; M. V. Samuel, Adelaide and London; Eluned Saunders, Cardiff and Westminster; Christine F. T. Saville, Univ. College; E. H. Sears, Guy's; H. M. Sein, Calcutta and Guy's; H. Selby-Brown, Guy's; H. T. Simmons, Manchester; W. H. Simonds, Cambridge and St. Thomas's; D. Sivasubrahmaniam, Madras and London; Constance B. Smith, King's College; Edith J. L. Smith, Royal Free; Elizabeth S. Smith, Birmingham; E. H. Spickett, St. Bart.'s and Cardiff; T. T. Stamm, Guy's; D. M. Stern, Cambridge and London; R. Ström-Olsen, Cardiff; A. B. Sullivan, Sydney and London; A. B. Taylor, Birmingham; J. G. Thwaites, St. Thomas's; B. Timothy, Madras and London; W. E. Tucker, Cambridge and St. George's; G. N. Unnithan, Madras and Univ. College; B. T. Utley, St. George's; L. E. Vine, Bristol; F. H. Ward, Cambridge and St. Bart.'s; D. K. Weston, Guy's; D. B. J. Wijeyesekera, Ceylon and King's College; P. Wiles, Middlesex; Gladys E. Wilkinson, Manchester; G. G. Willcox, Cambridge and St. Thomas's; Enid M. Williams, Cardiff; L. D. Williams, Cardiff and Guy's; W. A. Wilson, Univ. College; E. W. Winch, Cambridge and St. George's; H. S. H. Wood, Middlesex; J. L. M. Wood, Sheffield; Elsie E. Wright, Royal Free and St. Mary's; T. C. Yip, St. Bart.'s; and H. D. R. Zscherpel, Madras and St. Bart.'s.

The undermentioned diplomas were conferred (jointly with the Royal College of Surgeons) upon the following candidates:—

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.

C. H. Ackroyd, C. H. Bamford, W. J. Chapman, A. L. El Kirdani, Charlotte E. Fisher, B. B. Ghosh, J. B. Hamilton, R. J. Harley-Mason, D. R. Jadeja, D. Katz, G. L. Khirwadkar, D. G. Kotibhaskar, F. J. Lavery, H. H. Mahmood, T. M. O'Neill, F. W. G. Smith, A. F. Stewart, J. M. Thomson, A. Walbank, and J. Wood.

DIPLOMA IN PUBLIC HEALTH.

D. R. Bernhardt, R. A. D. J. Bernhardt, H. P. Bilimoria, H. St. C. Colston, A. C. Counsell, G. I. Davies, C. H. Dhala, M. Farid, F. Harris, G. H. Hayes, Margaret Holdsworth, D. R. Jandial, Iris A. Jenkin-Lloyd, Eva M. Malmberg, S. N. Michaels, Josefine W. Nagel, M. A. Nicholson, F. W. Oldershaw, D. B. Parakh, Jessie L. Robb, Mary Schofield, Beatrice M. Smithies, Josephine I. Terry, D. L. Tucker, and G. R. Waller.

Diplomas in Laryngology and Otology and in Psychological Medicine have been conferred upon candidates whose names appeared in our issue of July 21st (p. 153).

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—At an ordinary meeting of the College held on July 26th, with Sir John Rose Bradford, the President, in the chair, the following were elected members:—

Charles N. Armstrong, Ramananda Bandyopadhyay, Philip Bayer, John L. Edwards, Frank R. Fletcher, Robert D. Gillespie, Frank Goldby, Hamilton Hartridge, Thomas R. Hill, Horace Joules, Charles E. Kellett, Robert M. B. Mackenna, Patrick H. O'Donovan, Ian H. K. Stevens, and Arthur S. Wesson.

Licences to practise medicine were conferred on 167 candidates whose names appear above.

Mr. Arthur Sturgess Hollins, M.B. Camb., M.R.C.P., of King's College Hospital, was awarded the Murchison Memorial Scholarship.

The following officers of the College, members of committees, and examiners were elected for the ensuing year:—

Censors.—Lord Dawson of Penn, Dr. J. S. Collier, Dr. A. P. Beddard, and Dr. R. A. Young.
Treasurer.—Dr. S. P. Phillips.
Registrar.—Dr. Raymond Crawfurd.
Harveian Librarian.—Dr. Arnold Chaplin.
Assistant Registrar.—Dr. R. O. Moon.
Library Committee.—Dr. F. Parkes Weber, Dr. H. C. Cameron, Dr. H. R. Spencer, and Dr. C. J. Singer.
Curators of the Museum.—Dr. J. M. Bruce, Dr. C. E. Lakin, Dr. William Hunter, and Dr. J. H. Thursfield.
Finance Committee.—Dr. H. Morley Fletcher, Sir John Broadbent, and Dr. J. H. Thursfield.
Examiners.—Chemistry: Mr. H. W. Cremer and Mr. W. H. Hurtley. Physics: Mr. J. H. Brinkworth and Mr. D. Orson Wood. Practical Pharmacy: Dr. W. J. Adie, Dr. Hugh Gainsborough, Dr. Newman Neild, Dr. V. J. Woolley, and Dr. Orlando Inchley. Physiology: Dr. B. J. Collingwood and Dr. Swale Vincent. Anatomy: Dr. G. Elliot Smith. Pathology: Sir Frederick Andrewes and Dr. Charles Bolton. Medical Anatomy and Principles and Practice of Medicine: Sir Percival Hartley, Dr. A. G. Phear, Dr. Herbert French, Dr. A. E. Russell, Dr. Cecil Wall, Dr. J. A. Nixon, Dr. Frederick Langmead, Dr. C. E. Lakin, Dr. D. H. de Souza, and Dr. F. M. R. Walshe. Midwifery and Diseases Peculiar to Women: Dr. Cuthbert Lockyer, Dr. Eardley Holland, Dr. Malcolm Donaldson, F.R.C.S., Dr. William Gilliatt, and Dr. Stanley Dodd. Public Health: Part I., Dr. J. H. Ryffel; Part II., Dr. Charles Porter. Tropical Medicine: Dr. J. C. G. Ledingham and Dr. H. H. Scott. Ophthalmic Medicine and Surgery: Dr. Grainger Stewart. Psychological Medicine: Part I., Dr. Edward Mapother; Part II., Dr. J. Porter Phillips and Dr. Bernard Hart. Laryngology and Otology: Dr. D. R. Paterson.

Sir Humphry Rolleston was re-elected as representative on the Executive Committee of the Imperial Cancer Research Fund.

Sir Wilmot Herringham was appointed to deliver the Harveian Oration, and Dr. J. A. Arkwright, F.R.S., the Bradshaw Lecture in 1929. The following further appointments were announced: Dr. G. F. Still as Fitzpatrick Lecturer for 1929; Dr. R. A. Young as Lumleian Lecturer for 1929; Dr. E. B. Verney as Goulstonian Lecturer for 1929; Dr. F. M. R. Walshe as Oliver-Sharpey Lecturer for 1929; The Rt. Hon. H. A. L. Fisher as Lloyd Roberts Lecturer for 1929; and Sir Charles Martin as Croonian Lecturer for 1930.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates for the Triple Qualification have been approved and have been admitted as Licentiates:—

FINAL EXAMINATION.

Betty C. Hamilton, E. A. Downes, John Campbell, D. A. Herd, A. J. A. Gray, Oscher Stern, J. L. Dudgeon, C. V. Salisbury, S. K. Pillai, M. J. S. Pillai, A. M. D'Cotta, Maud Heaton, H. S. Lawrence, A. F. B. Mackay, A. El Sayed El Khishin, A. B. Mendis, Robert Rajaretnam Tamber, N. S. Fraser, C. L. X. S. Muttukumaru, I. M. Chisholm, A. M. Fraser, David Bendel, Barney Schulman, F. E. Ll. Stewart, Harry Lazarus, H. M. C. de Silva, B. S. Swani, E. H. B. Gooch, W. D. Alvis, Aaron Jacorovitch, R. A. F. M. Saunders, A. J. F. Almeida, F. A. Silva, and J. S. Goonting.

The following have satisfied the examiners in the undermentioned subjects:—

Medicine.—J. T. F. Pearse, J. H. Brush, D. N. Chisholm, H. A. Mohamed, Gerald Kahn, Hope Lazarus, L. O. Abeyaraine, Chrysostom Joseph, Leslie Myers, A. K. M. Attia, S. S. Nagi, and Hyam Saacs.
Surgery.—J. R. Martin, J. T. F. Pearse, Hanna Barsoum, J. H. Brush, C. H. Wilkie, C. Joseph, Leslie Craig, Okunade Ajibade, A. L. Malik-Mansour, A. K. M. Attia, Hugh Craig, and Kandiah Kanagasabapathy.
Midwifery and Gynæcology.—J. R. Martin, F. R. B. H. Kennedy, Hanna Barsoum, B. A. D. Robert, M. A. Mohamed, John Elliott, W. P. B. Winston, Leslie Craig, T. R. Jansen, Leslie Myers, S. W. Cruickshank, D. S. McMillan, Donovan Brink, and Hyams Saacs.
Medical Jurisprudence and Public Health.—M. C. Smith, W. O. Molander, F. R. B. H. Kennedy, W. P. Kennedy, G. G. Brown, H. G. Somerville, Margaret Leslie, John McConnell, Amin Madwar, Dorothy Williams, R. L. Allan, L. C. Leslie, Harry Michaelson, Agnes F. Millar, R. T. Amour, J. E. Morrison, J. W. Gregory, and W. V. Anderson.

UNIVERSITY OF EDINBURGH.—At a graduation ceremonial on July 18th the following degrees were conferred:—

M.D.

†Harry Bedingfield, ‡J. C. R. Buchanan, J. J. B. Edmond, F. W. Gavin, ‡C. G. Gooding, James Gray, ‡Muriel G. Henderson, ‡J. C. Hodgson, J. C. Macgown, J. D. P. M'Latchie, ‡G. W. Milroy, *J. W. T. Patterson, N. H. Smith, and A. J. Wilson.

* Awarded gold medal for thesis.
† Highly commended for thesis.
‡ Commended for thesis.

M.B., CH.B.

K. A. Abayomi, J. A. Adams, W. A. D. Adamson, Ian Aird, S. W. H. Askari, E. L. Bartleman, D. F. Baxter, H. C. Benson, K. S. P. Blatchley, §G. I. H. Braine, Dorothy D. W. Brander, Jane P. H. G. Brown, J. S. Brown, §John Bruce, §A. M. Calder, §J. C. Clark, C. W. Clarke, J. L. Cover, J. D. Crerar, J. J. Cruickshank, F. H. A. L. Davidson, William Davidson, D. B. Davies, R. H. Dawson, J. B. Dewar, J. R. Dogra, C. R. E. Downing, I. D. Easton, J. C. Edwardes-Jones, E. L. Farquharson, D. I. C. Finlayson, J. A. C. Fleming, §T. M. Galloway, E. G. Gibbs, Margaret D. Gillan, T. W. Gillespie, T. H. Gillison, E. M. Gilroy, Alexander Gordon, A. A. Gordon, Arthur Greenberg, H. G. Hanan, K. N. A. Herdman, L. R. Hetherington, §I. G. W. Hill, Alice E. Hodge, R. M. Honey, J. L. M. Jeffares, A. J. Jones, H. M. King, D. F. Laing, C. R. D. Leeds, A. J. M'Cutcheon, W. A. M'Dowall, J. H. M'Elney, T. N. MacGregor, F. C. M. M'Ilwrick, P. D. M'Kenna, D. E. Mackenzie, J. A. M'Lauchlan, A. D. Macleod, J. G. S. M'Queen, Malcolm Macvicar, G. H. Marshall, Bernard Matheson, J. A. Melanson, William Miller, T. A. H. Munro, C. P. M. Neethling, R. F. Ogilvie, A. R. Oliver, A. S. Paterson, J. B. Patrick, L. B. Patrick, D. P. Pick, F. B. Platt, D. B. Purves, Balwant Ram, E. B. Rayner, T. A. Redhead, A. D. Reid, G. J. Roberts, Donald Robertson, J. D. Robertson, C. A. Rogan, P. K. Shand, William Shaw, A. F. S. Silver, Alexander Simpson, John Sinclair, G. P. Smith, John Stevenson, R. T. Thin, R. S. Thompson, §I. M. Tod, §Ta-Ming Tso, A. J. Vakil, R. H. Vartan, Vera M. Walker, S. L. Ward, M. H. Watthews, J. S. Webster, A. H. Weston, and J. S. Westwater.

§ Passed with honours.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.

G. W. Gale.

DIPLOMA IN RADIOLOGY.

G. G. Allan, A. J. W. Allen, R. S. MacHardy, W. J. Mowat, and F. G. Stephens.

The Cameron Prize in Practical Therapeutics has been awarded to Dr. Constantine Levaditi, Professor of Microbiology in the Pasteur Institute, Paris, in recognition of the importance of his recent contributions on the therapeutic action of bismuth.

Medals, prizes, and scholarships were conferred as follows:—Thesis Gold Medal: J. W. T. Patterson. Ettles Scholarship and Leslie Gold Medal: I. G. W. Hill. Gunning Victoria Jubilee Prize in Pathology: J. D. A. Gray. Milner Fothergill Medal in Therapeutics: J. G. M'Crie. Allan Fellowship in Clinical Medicine and Clinical Surgery: I. G. W. Hill. Freeland Barbour Fellowship: A. B. Walker. M'Cosh Graduates and Medical Bursaries: A. S. Johnstone. Mouat Scholarship in the Practice of Physic: T. M'L. Galloway. Buchanan Scholarship in Midwifery and Gynæcology: T. N. MacGregor. James Scott Scholarship in Midwifery: Vera M. Walker. Beaney Prize in Anatomy and Surgery: I. M. Tod. Conan Doyle Prize: R. M'K. Honey. Annandale Gold Medal in Clinical Surgery: Ian Aird. Murdoch Brown Silver Medal in Clinical Medicine: Charles W. Clarke. Royal Victoria Hospital Tuberculosis Trust Gold Medal: J. B. Patrick. Scottish Association for Medical Education of Women Prize and Dorothy Gilfillan Memorial Prize: Vera M. Walker. Wightman Prize in Clinical Medicine: A. F. K. Clarkson and A. S. Paterson (equal). Pattison Prize in Clinical Surgery: I. G. W. Hill. Sir Robert Jones Prize

in Orthopædic Surgery: Esmé M. Gilroy. Wellcome Medals and Prizes in the History of Medicine: Gold Medal, W. A. Bain; Silver Medal, J. A. P. Cameron. Cunningham Memorial Medal and Prize in Anatomy: T. H. Brown. Whiteside Bruce Bursary: J. A. Baty.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the subjects indicated:—

Surgery.—K. E. Clarke, Charing Cross Hosp.; K. G. Milad, St. Mary's Hosp.; and H. Tenenbaum, Nancy and London Hosp.

Medicine.—M. K. Bryce, London Hosp.; J. P. Collinson, Sheffield and London Hosp.; N. Das, London Hosp.; W. B. Hallums, St. Mary's Hosp.; A. H. Hennessey, Adelaide and London Hosp.; E. P. Johnson, Manchester; E. A. Lipkin, Liverpool; and H. S. Marks, Guy's Hosp.

Forensic Medicine.—T. A. Barnabas, Bristol; P. C. Basu, Calcutta; H. C. Clifford-Smith, Charing Cross Hosp.; J. P. Collinson, Sheffield and London Hosp.; H. H. Jackson, Manchester and Charing Cross Hosp.; E. P. Johnson, Manchester; A. A. Leibovitch, Kharkoff and London Hosp.; T. A. P. Proctor, Birmingham; and H. Tenenbaum, Nancy and London Hosp.

Midwifery.—T. A. Barnabas, Bristol; P. C. Basu, Calcutta; J. S. B. Bray, Cambridge and St. Bart.'s Hosp.; A. R. D'Abreu, Leeds; H. W. E. Dickey, Manchester; N. H. Kettlewell, Middlesex Hosp. and Bristol; and S. M. Rahman, Calcutta and Middlesex Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: P. C. Basu, M. K. Bryce, H. E. Clarke, W. B. Hallums, and H. S. Marks.

UNIVERSITY OF BELFAST.—Dr. A. M. Drennan has been appointed to the chair of pathology in the University. A graduate of Edinburgh, Prof. Drennan, at present occupies the chair of clinical pathology in the University of Otago, New Zealand.

COURSE OF INSTRUCTION FOR D.P.H.—A three months' course of lectures and demonstrations on clinical practice and in hospital administration will be given at the North-Eastern Hospital, St. Ann's-road, Tottenham, London, N., by Dr. F. H. Thomson, the medical superintendent, on Mondays and Wednesdays, at 4.45 P.M., and alternate Saturdays at 11 A.M., beginning on Oct. 1st. Further information may be had from the clerk to the Metropolitan Asylums Board, Victoria Embankment, E.C. 4.

THE LATE MR. CHARLES CURD.—The death occurred on July 28th of Mr. Charles Curd in his seventy-third year. A native of Bath, he received his medical education at Charing Cross Hospital, qualified as L.S.A. in 1878 and M.R.C.S. in 1879, and held a house appointment at the hospital. After practice at Amersham and Liskeard he returned to Bath, where he was for many years closely identified with the work of the Royal United Hospital, being chairman of the Board of Management in 1925 and a trustee at the time or his death. During the war he rendered excellent service at the Bath War Hospital. A prominent Freemason, he devoted much of his time to local affairs, and for some time represented Lansdown Ward on the Board of Guardians.

ANIMAL DISEASES RESEARCH ASSOCIATION.—A donation of £10,000 has been given anonymously to this association, whose headquarters are at Aberdeen, in order to strengthen and increase the research staff.

SECRETARYSHIP OF ST. THOMAS'S HOSPITAL.—A presentation on behalf of the governors and medical staff of St. Thomas's Hospital, London, has been made to Mr. G. Q. Roberts, C.B.E., who is now retiring from the position of secretary and receiver, which he has held for the last 25 years. Mr. Roberts's successor will be Lieut.-Colonel A. P. B. Irwin, D.S.O., who has been assistant secretary since 1922.

THE LATE DR. G. O. MCKANE.—Dr. George Oliphant McKane, who died at Cleethorpes on July 26th in his eighty-first year, had spent nearly half a century in medical practice. He gained the Scottish triple qualification in 1875, and retired only three or four years ago. The last 20 years of his active life were lived at Waltham, near Grimsby, where he carried on a large country practice. He was also medical officer of health to the Grimsby Rural District Council, and poor-law medical officer and public vaccinator to the fourth district of the Grimsby Union. A man of strong and cheerful personality he had great powers of sympathy, and enjoyed the confidence of his patients to a remarkable degree. Dr. McKane was a native of Hexham, and before studying medicine qualified as a chemist. He was for many years in practice at Byers Green, Co. Durham, and Leeds. His two sons are members of the medical profession.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Bills Advanced.

IN the House of Lords on Friday, July 27th, the Reorganisation of Offices (Scotland) Bill was read the third time. In the House of Commons the Food and Drugs (Adulteration) Bill was read the third time.

HOUSE OF COMMONS.

WEDNESDAY, JULY 25TH.

Ex-Service Man and Sleepy Sickness.

Sir HENRY COWAN asked the Secretary of State for War whether his attention has been called to the case of Alfred Lines (whose blue medical sheet was endorsed Fit for service in any part of the world), who joined the Middlesex Regiment on June 4th, 1926, served with the Shanghai defence force in China until afflicted with sleepy sickness, returned to England and was discharged from Netley Hospital as physically unfit for any form of military service on Nov. 11th, 1927, with a sum of £1, and who, after waiting for his official discharge papers, received a communication from Chelsea Hospital, dated Dec. 5th, 1927, stating that he was not entitled to any discharge pension and offering him a gratuity of £6 only, less deduction of any advances that had been made to him; and whether, having regard to the fact that his panel doctor had certified that Lines would never be able to work again and that the symptoms of the disease which necessitated his discharge from the Army first appeared during his military service with the Shanghai defence force, he would consider granting this man some compensation more adequate than the amount of 7*s.* 9*d.* actually paid him as the balance of the gratuity of £6.—Mr. DUFF COOPER (Financial Secretary to the War Office) replied: This case has been carefully reviewed at the War Office, and the Army medical authorities are satisfied that the disability was not caused by military service. In the circumstances, Mr. Lines has no claim to compensation, and the small gratuity awarded is the appropriate grant in his case.

Replying to further questions in regard to Mr. Lines's case, Mr. Duff Cooper said the War Office could not allow the principle to be established that anybody who happened to fall ill while on military service should by that fact alone be entitled to some compensation. There was no evidence to show that this man's illness was in any way connected with his being sent abroad. It was not an illness to which soldiers were subject through their being sent abroad.

Health of the Merchant Service.

Dr. VERNON DAVIES asked the President of the Board of Trade if he would consider the advisability of coöperating with the Minister of Health to issue an annual report on the health of the merchant service, bearing in mind that the seaman's mortality from disease exceeded the average by 48·8 per cent., and his mortality from violence by 4·30 per cent.—Mr. HERBERT G. WILLIAMS (Parliamentary Secretary to the Board of Trade) replied: My right hon. friend will consult the Minister of Health with regard to the suggested preparation of an annual report on the health of the merchant service, and I will let my hon. friend know the result in due course.

Tuberculosis Mortality-rate.

Sir ROBERT THOMAS asked the Minister of Health whether he was aware that there had been since 1910 little reduction in the tuberculosis mortality-rate for males between the ages of 15 and 25, while for females between these ages the rate had increased; and what measures he proposed to take to improve the position.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the affirmative, but the rate for both males and females between these ages appears at the present time to be decreasing. The discrepancy between the rate of decrease in the mortality from tuberculosis in the general population and that in the groups referred by the hon. Member has been under consideration in my department, but my right hon. friend is advised that its causes are obscure. Investigation is proceeding, and the tuberculosis officers of local authorities will be asked to give special attention to the question.

THURSDAY, JULY 26TH.

Treatment of Casual Paupers.

Mr. SHEPHERD asked the Minister of Health whether, in view of the number of unemployed men and women now tramping the roads in search of employment, he proposed to revise the regulations concerning their treatment, with special regard to food, sleeping, medical inspection, searching, task work, detention, washing, and method of obtaining

admission.—Mr. CHAMBERLAIN replied: No, Sir. I am not aware of any reason for the revision of the regulations in force, which do, as the hon. Member is aware, make special provision for casuals genuinely in search of employment. I think it is important that there should be general and complete compliance with the regulations, and I am giving my officers further special instructions to impress upon guardians and their staffs the necessity of securing this full compliance in cases in which there is any default.

Shortage of Water in Derbyshire.

Mr. DUNCAN asked the Minister of Health whether he was aware of complaints of the short supply of water for domestic purposes in the parish of South Normanton, in the Blackwell rural district council area, Derbyshire; whether this shortage covered a period of years; whether complaints had previously been made to the Ministry of Health; whether the local authorities had laid any proposals before the Ministry for approval, and whether there was any delay occasioned in his department in this matter; and whether he was prepared to take immediate action with a view to terminating the present shortage and providing the area with a full supply sufficient for the general health and domestic needs of the inhabitants.—Mr. CHAMBERLAIN replied: The answers to the first four parts of the question are in the affirmative, and to the sixth part in the negative. In reply to the fifth part, an outline of a joint scheme was submitted to me in April, 1927, and provisionally approved in January last, but in the meantime further difficulties have arisen in connexion with the risk of subsidence. In reply to the seventh part of the question, I have directed one of my inspectors to make a local investigation with a view to expediting temporary relief, and I am hoping to receive from the local authorities concerned definite proposals for a permanent scheme on satisfactory lines.

New Cancer Hospital in Manchester.

Sir THOMAS WATTS asked the Minister of Health if his attention had been called to the proposed establishment of a cancer hospital in Palatine-road, Withington, a residential district of Manchester; and, having regard to the depreciation in the value of property in the district which would result, would he set up an inquiry into the matter.—Mr. CHAMBERLAIN replied: The answer to the first question is in the negative. If, as I assume, the reference is to the establishment of a voluntary hospital, I am not aware that it is open to me to take any action.

Traffic Noises in Urban Streets.

Sir ROBERT THOMAS asked the Home Secretary whether he was aware that there is a growing volume of public protest against the noise of urban streets; that it was endangering the lives of sick people and undermining the fitness even of those in normal health; that it interfered with education and lowered the efficiency of business; that experts estimated that 60 per cent. of the noise was preventable; and that it would continue to increase unless action was taken; and whether he would, in conjunction with the Ministers of Health and Transport, make an effort to deal with these conditions.—Sir W. JOYNSON-HICKS replied: I am aware that there is much complaint, and I think with good ground. I have done all in my power to see that the nuisance is abated, so far as this is possible, by police action under existing powers, and I will certainly consult with my right hon. friends as to whether anything further can be done.

Sir R. THOMAS: Is the right hon. gentleman aware that a high medical authority at a meeting of the British Medical Association last week estimated that the loss in efficiency to the nation owing to these noises amounted to no less a sum than £1,000,000 a week?

Sir W. JOYNSON-HICKS: Yes, I have noticed that.

Lieut.-Commander KENWORTHY: Will the right hon. gentleman consult with the Prime Minister about this in view of the probability that the present laws are insufficient to deal with the growing noises?

Mr. LANSBURY: Will the right hon. gentleman communicate with the London County Council and ask them to keep the tramway tracks in order and thus prevent the most infernal noises?

Sir W. JOYNSON-HICKS: I will communicate with the Minister of Transport whose duty it would be, I think, to communicate with the London County Council.

Captain CROOKSHANK: Will the right hon. gentleman look into the practice which obtains in the United States of zoning certain areas where certain noises are prohibited?

Sir R. THOMAS said that this was a fearfully important question, and he thought that the House ought to get from the Home Secretary something more than they had had. The right hon. gentleman had said that he would consult with his Ministerial colleagues. Could he do so and report to the House before the end of the session?

Sir W. JOYNSON-HICKS said that he would take the opportunity of discussing the matter with his colleagues, but whether it would be possible to answer a definite question before the end of the session he could not say.

Conjunctivitis in the Artificial Silk Industry.

Mr. KELLY asked the Home Secretary whether reports had been received from his inspectors about the increase in injuries suffered by men and women engaged in the artificial silk industry.—Sir WILLIAM JOYNSON-HICKS replied: I have received reports by the inspectors which I am glad to state show that, except in one works where there has been a large increase in the number of persons employed, the number of cases of conjunctivitis has, during recent months, been decreasing. As the hon. Member knows, this industry is receiving the closest attention both from the staff generally and from the medical inspectors, and much has been, and is being, done to improve the conditions.

Early Treatment of Mental Disease.

Dr. VERNON DAVIES asked the Minister of Health if he was aware that the only hope of reducing the incidence of insanity and improving the recovery-rate was by altering the law so as to allow and encourage the early and skilled treatment of persons mentally ill; and if he would, at any early date, give this matter his serious consideration and take the necessary action.—Mr. CHAMBERLAIN replied: I should be sorry to think that the *only* hope of reducing the incidence of insanity and improving the recovery-rate lay in the measures which my hon. friend suggests. But I fully realise the great importance of improving the facilities for early mental treatment, and as I have frequently stated, I hope to be able to take the necessary action as soon as it is practicable to introduce legislation.

Regional Medical Officers and Drug Prescriptions.

Mr. SHORT asked the Minister of Health whether any special sum was allocated for the payment of drugs prescribed by panel doctors; whether he was aware that regional medical officers had recently brought pressure upon panel doctors respecting their prescriptions and thereby limiting their discretion in prescribing medicines for panel patients, and that the East Sussex Insurance Committee, at its meeting on July 3rd, expressed its view that a practitioner should not cease to prescribe drugs which he believed to be reasonably necessary for the adequate treatment of panel patients; and if he would explain the nature of the instructions given to regional medical officers on this matter.—Mr. CHAMBERLAIN replied: As regards the first part of the question, I would refer the hon. Member to the reply given to a question on April 4th. I am aware of the views expressed by the East Sussex Insurance Committee. The duty of insurance practitioners is to prescribe proper and sufficient medicines, and the purpose of the interviews arranged between certain practitioners and regional medical officers is solely to secure that this duty is performed.

MONDAY, JULY 30TH.

Welsh Board of Health.

Mr. JOHN asked the Minister of Health if the reason for the change in the composition of the promotion board in the office of the Welsh Board of Health was due to the alleged internal difficulties; and whether he had received complaints with regard to the action of the promotion board in recommending promotions.—Mr. CHAMBERLAIN replied: The answer to both questions is that troubles in regard to promotion have been part of the internal difficulties of the past, and that the change in question seems to me the best way of securing a better position in the future.

Analysts and Food and Drugs Adulteration Bill.

Mr. CECIL WILSON asked the Minister of Health whether, in regard to the Food and Drugs (Adulteration) Bill, any consultation had taken place with the Institute of Chemistry, or the Society of Analysts, or other similar bodies; and, if not, for what reason.—Mr. CHAMBERLAIN replied: No, Sir. As the object of the Bill is not the amendment but the consolidation of the existing law, its preparation was a purely legal matter, and it was not considered necessary to consult the bodies mentioned. I understand, however, that the Society of Public Analysts communicated with the Joint Committee on Consolidation Bills, and that the Committee considered the Society's views on the Bill.

Sewage Effluvia and Public Health.

Mr. LOOKER asked the Minister of Health whether he was aware that the effluvia coming from the sewage disposal works of the West Kent Sewerage Board constituted a menace to the health of the inhabitants of the parish of West Thurrock; and if he would take steps in the matter.—Mr. CHAMBERLAIN replied: I am not aware that there is any menace to health from this cause. I understand that officials of the District Council and the Sewerage Board have been conferring on the subject and I am ascertaining the position.

TUESDAY, JULY 31ST.

Use of Preservatives in Cream.

Mr. THOMAS KENNEDY asked the Secretary of State for Scotland if he had considered any representations made to him by the distributors of fresh cream in Scotland regarding the loss involved in the observance of the regulations prohibiting the use of preservative in cream; if he was aware that large quantities of cream sent daily from the creameries was unfit for use before it reached its destination; that as a consequence tinned foreign cream was rapidly taking the place of home-produced double fresh cream in the Scottish market; that the foreign cream was inferior in food value; that before the passing of the present regulations a harmless and minute quantity of boron preservative was allowed, which was sufficient to keep cream in perfect condition for three days or more; and if he would now consider the desirability of suspending the regulations referred to.

Mr. WESTWOOD asked the Secretary of State for Scotland if he had received any communication from the distributors of fresh double cream drawing his attention to the effect of the prohibition of the use of 0·04 per cent. of boron preservative in cream; and, if so, what action, if any, he proposed in the interests of farmers, distributors, and the general public.—Sir J. GILMOUR replied: Representations on the various points mentioned in the questions have been received but, for reasons which I have already given, I am not prepared to suspend the operation of the Preservative Regulations in regard to double cream. This matter has been long and carefully considered and the Scottish Board of Health are satisfied that if proper attention is given at all stages to the production of milk and the handling and transit of cream it ought to be possible to market fresh double cream in a sound condition. In regard to the suggestion that the amount of preservative added to double cream before the regulations came into operation was harmless and minute, I would point out that the amount used was 0·4 per cent., and that the Departmental Committee on Preservatives reported against the use of boric acid in foodstuffs in the interests of public health. So far as concerns the interests of farmers, the National Farmers Union of Scotland and the Scottish Agricultural Organisation Society have passed resolutions in favour of the prohibition of preservatives in cream.

Short Measure in the Sale of Milk.

Mr. LOUGHER asked the President of the Board of Trade whether, in respect of the sale of milk, he could state the cause of the delay in issuing regulations to enable adequate control to be maintained in connexion with methods of filling milk bottles; and whether he was satisfied that the public were at present adequately guarded against short measure being supplied.

Colonel ENGLAND asked the President of the Board of Trade if he was now operating the section of the Weights and Measures Act which prescribed the use of milk bottling and measuring machines; if so, when this section of the Act became operative; and what steps had been taken to carry it out.—Sir P. CUNLIFFE-LISTER replied: There is no Act of Parliament which prescribes the use of milk bottling and measuring machines, but draft regulations applying to such machines the general provisions of the Weights and Measures Acts are now under consideration by a small committee representative of local authorities and other interests concerned. I hope to be able to issue the draft shortly for public information. In the meantime the provisions of the Sale of Food Act, 1926, which makes it an offence to give short measure, are available for the protection of the public.

Grants for Supply of Milk and Nourishment.

Mr. THURTLE asked the Minister of Health the total amount of economy in Exchequer expenditure he expected to effect by his proposals to local authorities to cut down their grants for the supply of milk and nourishment in connexion with maternity and child welfare work.—Mr. CHAMBERLAIN replied: It is estimated that the total amount of the Exchequer grants payable to local authorities in respect of their expenditure for this purpose during the present financial year will be about £12,000 less than would have been the case in normal circumstances.

Sun Helmets for Police Constables.

Lieut.-Commander KENWORTHY asked the Secretary of State for the Home Department if he would consider the issue of an approved type of sun helmet, especially to constables employed on traffic control in the middle of the streets during hot weather.—Sir W. JOYNSON-HICKS replied: The question has been considered, but our summers are usually so short and changeable that it has not hitherto been thought necessary to provide any special sun or straw helmets. When the weather is hot, orders are given for the removal of chin straps, and if the heat continues the question will be further considered.

Vacancies.

For further information refer to the advertisement columns.

Barry Accident and Surgical Hospital.—H.S. At rate of £200.
Bath, Royal United Hospital.—Asst. H.S. £100. Also H.S. and H.P. Each £120.
Belfast, City and County Borough of.—Med. Supt. O.H., &c. £2000.
Bolton, Townleys Hospital, Farnworth.—Second Asst. M.O. £225.
Bootle, Bootle Borough Hospital, Derby-road.—Sen. M.O. Also 2 Jun. M.O.'s. Each at rate of £150 and £125 respectively.
Brighton, Royal Sussex County Hospital.—H.S. £150.
Bristol Royal Infirmary.—H.P.'s, H.S.'s, also Dental H.S. Each at rate of £80.
Cardiff, Prince of Wales' Hospital.—H.S. £100.
Cardiff, University College.—Lecturer and Demonstrator in Anatomy.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. H.S. £100.
Chester County Mental Hospital.—Fourth Asst. M.O. £350.
City of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H. P. At rate of £100.
City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.
Coventry, Coventry and Warwickshire Hospital.—Res. H.P. £125.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. At rate of £125.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. Surgeon to Ear, Nose and Throat Department.
Glasgow, University of.—Gardiner Chair of Physiological Chemistry.
Great Yarmouth General Hospital.—H.S. £150.
Ilkeston, Borough of.—M.O.H. and School M.O. £800.
Infants Hospital, Vincent-square, Westminster.—H.P. At rate of £75.
Leeds, City of.—Asst. M.O.H. for Maternity and Child Welfare. £800.
Leeds, St. James' Hospital.—Res. Deputy Med. Supt. £450.
Liverpool University.—George Holt Chair of Pathology. £1200.
Manchester, Baguley Sanatorium.—Asst. M.O. £350.
Market Drayton, Salop, Cheshire Joint Sanatorium.—Asst. M.O. £250.
Newcastle-upon-Tyne, Wooley Sanatorium, near Hexham.—Asst. M.O. £350.
Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. P. to Skin Dept.
Nottingham Children's Hospital.—Res. H.P. At rate of £150.
Nottingham City.—M.O.H. £1440.
Poplar Hospital for Accidents.—Radiographer. 10*s.* 6*d.* per session.
Reading, Royal Berkshire Hospital.—3rd H.S. £150.
Rotherham, Rotherham Hospital.—H.P. £180.
Royal College of Physicians, Pall Mall, East.—Milroy Lecturer.
Tuberculosis Dispensary and Bacteriological Laboratory, 114, New King's-road, Fulham, S.W.—Tuberculosis Officer and Asst. M.O.H. £750.
West Bromwich, West Bromwich and District General Hospital.—Res. H.S., H.S., also Cas. H.S. Each at rate of £200.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Carnwath (Lanarkshire).

Births, Marriages, and Deaths.

BIRTHS.

BAKER.—On July 22nd, at Langton's Meadow, Farnham Common, Bucks, the wife of Ormonde A. Baker, M.B., of a son.

CAIRNS.—On July 29th, at Norfolk-road, N.W., the wife of Hugh Cairns, F.R.C.S., of a daughter.

MARRIAGES.

BREWS—CHURCHILL.—On July 24th, at All Saints', Great Holland, Essex, Richard Allan Brews, M.D., F.R.C.S., to Gwyneth Grace, only child of Rev. J. D. and Mrs. Churchill, late of Little Bentley Rectory, Essex.

KOHNSTAM—DUNN.—On July 28th, at Lewisham, Geoffrey L. S. Kohnstam, M.D., M.R.C.P. Lond., to Helen Lorna Dunn, M.R.C.S. Eng., L.R.C.P. Lond., only daughter of Mr. and Mrs. F. W. Dunn.

MCCULLOCH—WRIGHT.—On July 26th, at St. Ann's Church, Manchester, William Edward McCulloch, M.B., Ch.B., Pathologist, Nigeria (West African Medical Service), to Joan, youngest daughter of the late Ernest Chorley Wright and Mrs. Wright, of Brabyns Cottage, Marple, late of Stretford.

MEEHAN—STRATHDEE.—On July 25th, at St. Sylvester's Church, Elgin, Felix Patrick Meehan, M.B., Ch.B., to Ann Barclay, second daughter of Mr. and Mrs. James Strathdee, "Braehead," Botriphnie, Keith.

DEATHS.

CHANCE.—On July 26th, in Dublin, Sir Arthur Chance, F.R.C.S.I., F.R.C.P.I., F.R.C.S. Edin., in his 70th year.

CURD.—On July 27th, at Forbes Fraser Hospital, after two days' illness, Charles Curd, M.R.C.S., L.S.A., of Gay-street, Bath.

LEES.—On July 22nd, at Breifond, Boyne Park, Tunbridge Wells, Charlie Lees, M.R.C.S., L.R.C.P., L.D.S. Eng., aged 53.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

HERPES ZOSTER AND CHICKEN-POX.

CASES are always being reported in which herpes zoster and chicken-pox appear in the same household, or in which people develop varicella after being in contact with herpes zoster, and vice versa. The isolated examples must now number many hundreds and constitute a formidable obstacle to the dualists who maintain that there is no inherent connexion between the two conditions. J. von Bókay, in 1892, was the first to suggest a common ætiology, and much evidence in its favour has since been adduced. Dr. G. A. Esquier, for instance, has just described a case in which the two conditions appeared simultaneously.[1] The patient was a soldier of 21, who did not report sick until the fourth day of his attack of chicken-pox, when fever and, more particularly, severe pain in his left side, took him to hospital. At that time typical vesicles in all stages of development were found on the scalp and body and—more sparsely—on the face, neck, and buccal mucosa. There were none on the limbs nor on the left side, where the pain was, and on this area typical herpes zoster developed along the seventh intercostal nerve. The zona consisted of vesicles of varying maturity, the youngest being at the end of the nerve, and the oldest near its root. The number of lymphocytes in the cerebro-spinal fluid proved to be 28 per cubic millimetre, and the differential white cell count in the blood showed 42 per cent. of lymphocytes and only 15 per cent. of polymorphonuclear leucocytes. As the crusts fell off, the blood count returned towards normal. Dr. Esquier explains this case by assuming that the virus of varicella can be fixed either in the skin, or in the spinal ganglia, or in a segment of the cord, producing, respectively, an attack of chicken-pox, a herpes zoster, or the "zoster fever" of Landouzy. He feels that the dualist view is based rather on sentiment and theory than on precise, carefully observed facts amd serological proof. In this soldier each chicken-pox eruption was accompanied by an identical herpetic eruption, suggesting very strongly that the two eruptions depended strictly on a common ætiological factor. Dr. R. L. Thorold Grant [2] describes a case of varicella breaking out in a woman of 37 with severe bilateral herpes, and Dr. D. E. H. Cleveland [3] one of herpes in a mother, followed after the correct incubation period by varicella in her daughter, and then, after a second incubation period, the appearance of a typical varicella rash, accompanied by erythema nodosum of the legs, on the mother. Both these cases seem to support the theory of common origin. Again, Dr. von B. M. van Driel [4] had a Javanese man of 28 with a typical varicella rash following a herpes of the left upper arm, and another of 26 with a herpes following a varicella. He made the experiment of inoculating four children of varying ages, and two young men with fluid from herpetic blebs. Except for one of the young men, none of the subjects showed more than a slight erythema at the site of injection; this man fell ill 12 days afterwards with typical varicella. The children might have been expected to remain immune; some would think herpes a more likely reaction than varicella in the young man, but presumably chicken-pox is not endemic in Java.

The arguments in favour of common origin were well summarised by Dr. Flandin in the discussion on the first case. He said that, histologically, the vesicles in the two conditions are identical; biologically, there is an absolute specificity of the fixation reaction between the two; and, experimentally, the inoculation of the contents of herpes vesicles into children who have not had chicken-pox gives the same results as "varicellisation." Inoculation with herpes confers immunity to chicken-pox. Epidemiologically the incubation periods correspond. Dr. M. A. Netter and Dr. Achille Urbain have recently investigated the deviation of the complement in these cases. Out of 100 herpes subjects, of whom 84 had had no apparent contact with varicella, 93 showed deviation of the complement, whether the antigen were taken from varicellar or herpetic vesicles. Similarly the results with varicellar serum were identical with either antigen. These workers concluded that poisons like arsenic, bismuth, and mercury produce herpes by acting as "agents provocateurs" of a virus which up till then had been harboured with impunity by the patient.

At the Brussels Congress in 1926, Flandin suggested that chicken-pox might be an early manifestation—and, indeed, herpes is rare in children—while herpes was the later systematised form, appearing in a subject immunised against chicken-pox. On this hypothesis an attack of herpes would be a reinfection or the result of a lowered immunity from some infectious or toxic cause.

[1] Bull. et Mém. de la Soc. Méd. des Hôp. de Paris, June 7th. Pp. 953.
[2] Med. Jour. Austral., 1927, i., 192.
[3] Can. Med. Assoc. Jour., 1927, xvii., 1299.
[4] Münch. med. Woch., 1927, ii., 1541.

THE TREATMENT OF ACUTE AND CHRONIC LARYNGITIS.

To the Editor of THE LANCET.

SIR,—Mr. Mollison, in his article on this subject in your issue of July 21st, mentions that faulty methods of voice production should be corrected. May I say that this should always include instruction in breathing through the nose, in view of the fact that one of the causes of laryngitis is inhalation of dust.

Most people are under the impression that they always breathe through the nose because they do not sit with their mouths open when not talking or singing. They do not realise that they breathe through the mouth when vocalising, and this means that the air is taken unwarmed, unmoistened, and unfiltered direct into the pharynx, larynx, windpipe, and lungs. Few know that it is possible to breathe through the nose without closing the mouth; indeed, many voice teachers state that it is impossible. At most it is conceded that though it *can* be done it involves undue pause and the making of a loud sniff. But both these objections are obviated if the necessary practice be carried out to make the dilators of the nostrils, and the soft palate, active and flexible. Breath can then be taken quickly and quite silently through the nose with the mouth open.

All voice users should be taught this, and to none is it more important than to actors and auctioneers, who speak in places that are laden with dust. If they will obtain instruction in the use of the voice, learn to breathe always through the nose, and follow the direction of their medical man to sniff up their nostrils a little of the medicated emollient that has been prescribed for them (and which, on inquiry I usually find they forget to do), they will be saved considerable pharyngeal irritation as well as the more serious laryngitis.—I am, Sir, yours faithfully,

KATE EMIL BEHNKE.

The Moor House, Lane End, Bucks, July 26th, 1928.

THE COST OF MOTOR ACCIDENTS.

Sir Arthur Stanley last week opened the new out-patient department of the Wolverhampton and Staffordshire Hospital, which has been erected as part of a reconstruction scheme to cost £45,000. He said that figures which had been compiled for him showed that the extra cost of motor accidents to the hospitals is £250,000 a year, of which some £30,000 is recovered from insurance companies. In addition to a large reception hall, the new department includes consulting and examination rooms for ear, throat, and nose cases; two consulting rooms for physicians and two for surgeons, with four examination rooms; rooms for the treatment of fractures and orthopædic cases; a small operating theatre; sterilising and anæsthetic rooms; a recovery room with eight beds for use after minor operations; an isolation room and a venereal diseases department.

Corrigendum.—In our report last week (p. 189) of the International Conference on Cancer, subject, "Diagnostic Methods," the remarks attributed to the Chairman in closing the discussion were actually made by Sir William Willcox.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

TUESDAY, August 7th.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Addison: Operations. 2 P.M., Dr. Shaw: Medical Out-patients.

WEDNESDAY.—10 A.M., Dr. Owen: Medical Diseases of Children. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Ward Visit.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Donald Armour: Operations. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstrations. 2 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Ear Operations. 10 A.M., Dr. Owen: Medical Diseases of Children.

Daily 10 A.M. to 5 P.M., Saturdays 10 A.M. to 1 P.M. Medical, Surgical, and Special Departments. Operations, Anæsthetic Course, &c.